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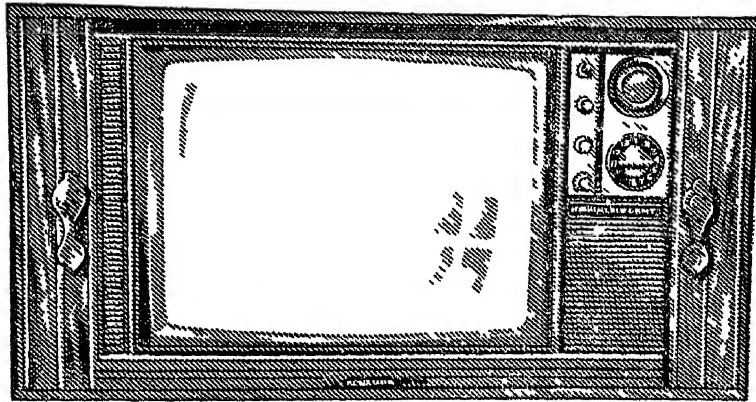
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Since a collection of the volumes will constitute a veritable encyclopaedia for authentic information and delightful reading, we solicit the active assistance of our enlightened subscribers and readers in achieving the ideals the Kendra has set before itself by enrolling themselves as Life-subscribers to our deluxe journal.

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Acknowledgements

The present volume of the Kendra Patrika on the theme "Mountains and Rivers of India" has been designed so as to present a geographical and cultural study of the various mountains and rivers of our nation

For the present issue, we had the good fortune of receiving contributions, help and guidance from persons in the field to enable us to present this issue in the rich traditional manner of the Kendra Patrika. A few contributors helped us not only with their valuable writings but also with relevant photographs. Many of them responded to our requests, in spite of limitations in time and other commitments. We are indeed very grateful to all the contributors who have extended their help and co-operation in response to our request.

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While every care has been taken to see that no party has been left out in our acknowledgements for their meritorious assistance and co-operation, we earnestly solicit forgiveness for any mistakes of omission or commission which, of course, has not been deliberate.

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August 1984

will be on the

theme

MUSIC INDIA

The volume will be a collection of prized articles from eminent personalities in the field of music from different parts of the country. The issue will be packed with information to inspire and enlighten the reader on this sublime and splendid heritage of our culture, the culture of India, that is Bharat.

महेन्द्रो मलय सह्या
देवतात्मा हिमालय ।
व्येया रैवतका विन्ध्या
गिरिश्चारावालिम्नया ॥

*Mahendro Malayah Sahyo
Devatatma Himalayah'
Dhyeyo Ravataka Vindhya
Garischaravalistatha*

Mahendra Malaya, Sahyadri Himalayas the Soul of the Devatas the
adorable Ravataka, Vindhvachala and Aravali all these mountains
are venerable

गंगा सिन्धुश्च कावेरी
यमुना च सरस्वती ।
रेवा महानदी गोदा
ब्रह्मपुत्र पुनातु माम् ॥

*Ganga Sindhuscha Kaveri
Yamuna cha Sarasvati!
Reva Mahanadi Goda
Brahmaputrah punatu mam[]*

Ganga Sindhu, Kaveri, Yamuna, Sarasvati, Reva (Narmada), Mahanadi
Godavari and Brahmaputra -may all these rivers sanctify me

Pratasmayanam athava Bharata Bhakti Stotram



VIVEKANANDA KENDRA PATRIKA

Vol. 13 No. 1 February 1984

EDITORIAL

There is no country in the world where its mountains and rivers have played such a vital role in the development of its culture as in India. No wonder that each one of them is not only endowed with a personality of its own but is also an object of adoration and worship. Indeed, it had to be so when our philosophy proclaims *Isavasyamidam sarvam, yat kincit jagatyam jagat*. 'Whatever is there in the world is pervaded by the great Lord'. Though superficially this adoration may appear like the whim or fantasy of a peculiar set of people, there is also a great universal message lying hidden behind it.

Our mountains and rivers are not just geographical formations, but 'exalted beings', each with its own glorious biography... Each of them has his or her own story to tell, a story of *tapas*, of *tyaga*, of *seva*. Together they add up to make the story of the grand panorama of Indian culture. Among them, the Himalayas and Ganges have the most sublime legends woven around them.

Himalaya, a synonym today of the biggest, the greatest and the best, is described as the guardian of the northern frontier of Bharat-varsha. How many sages and seers have realised the supreme Truth sitting on his lap and breathing his air. In his caves and peaks may be reverberating even today the vibrations of the great Vedic and Upani-

shadic chantings from the early dawns of human civilization. Out of these have emerged the essential truths of the eternal *Sanatana Dharma*. The greatest among these seers is none other than Sri Parameshwara Himself, the Eternal Teacher, the All merciful and the ultimate word in renunciation. No wonder that Himalayas gifted Him with the best of his possessions—his beloved daughter Parvathi. This divine couple, the parents of the world, have made their abode there on Mount Kailas. Can such a mountain be anything but holy?

Another daughter of his is the Holy Ganga, who has her origin in the celestial world and who was first brought down by the protruding foot of Lord Vishnu in his incarnation as Vamana. Still she remained unapproachable to the common man till Emperor Sagara's unparalleled *lapas* and efforts brought her down first to Shiva's locks and from there down to the plains for the perpetual benefit of mankind. The mischievous young maiden that she was, what all troubles she gave to the king on the way! That is a legend symbolising man's courage, patience and persistence by which alone Herculean obstacles are overcome. Yet another touching story depicts her as having left her Himalayan abode and rushed to the plains of Aryavarta unable to bear the hunger and sufferings of millions following a severe drought and famine. Born in the Himalayas, she carries incessantly both life and nourishment to the people in the plains with the eternal message that "Fulfilment of any possession is in sharing it with others." Her sanctity, purity and popularity have remained unpolluted and undisputed through centuries, a fact, freshly brought to our mind through the recent 'Ekatmata Yagna'. What wondrous developments in human evolution have taken place around her! The abodes of culture and civilization she has mothered through the ages are imprinted in golden letters on the pages of world history. In addition, she also gave us her son, the grand Sire of Mahabharata—Bheeshma—what to speak of him? In spite of all the effluents that are dumped into her by the irresponsible man today, she mysteriously preserves her purity. Her water even now has an unsurpassed shelf life, baffling scientific brains! Is it any wonder that she is addressed and venerated as Mother Ganga!

No less wonderful are the stories that our other mountains and rivers tell us too. There is the great Vindhya who still keeps himself down in obedience to the command of sage Agasthya, thus keeping up the unity of the north and south of our Holy Motherland. So also are the Sahyas, Aravalli ranges, Sabari Hills, Narmada, Godavari, Tungabhadra, Cauvery and a host of others each with its own glorious past.

As the country emerged from the legendary past, the mountains and rivers shed much of their mythological halo and developed a different personality. Around them came up new empires, new cultures, new civilizations, each with its own unique contribution to the Indian Panorama, yet firmly rooted in the eternal tenets of *Sanatana*

Dharma. Man also became increasingly aware of the great resources that these mountains and rivers were and slow exploitation of their great wealth started. Rivers, in addition, turned into waterways used for navigation and connected one city with another. New centres of trade and learning sprung up on their banks.

In modern times, they play a different role. Mountains with the rivers gushing forth from them provide the power most needed by today's man—the electrical power. New Temples, as Pandit Nehru referred to, the grand factories and dams of modern India—marvels of human technological skill—have developed around them—the Bhakra-Nangal, Damodar Valley, Nagarjuna Sagar, Tungabhadra Project, giving the much needed light and water for the sustenance of today's civilization. Thus they continue their lives of *tyaga* and *seva* in modern India as well. The only river yet to be tapped is the great *Brahmaputra*, with her changing moods and devastating floods and unpredictable course.

The story does not stop here. Today, our rivers, as elsewhere, have become the dumping grounds of man-made waste materials. The sewage from the cities and towns, the effluents from the hundreds of factories on their banks, all find their way into rivers and therefrom to oceans. The water in the rivers kills their own flora and the fauna and has now become undrinkable. Man, unmindful of the essential qualities of nature is out to rob her and spoil her little knowing that in the chain reaction that naturally follows, he himself is the sufferer. He cuts down the trees from the mountain sides and they in turn are now unable to hold the clouds. Either no rains, or if at all it rains, it is untimely.

Lord Krishna was the first to show how to worship a mountain. He called the attention of his people to the intimate relationship between his people and their surroundings and the need to worship Mount Govardhan, who was providing everything to his rural community. Krishna's exploits reveal the wondrous rapport that should exist between man and nature.

“*Tena tyaktena bhunjeetha*” (enjoy but with restraint), the inimitable verse in *Isavasyopanishad* proclaims. Our ancient seers gave us this great lesson—take from nature what you may, but not everything she possesses. Don't spoil her, destroy her. When you cut a tree, plant another ten. Learn to live in harmony with nature, never polluting her. Even spitting into a river is forbidden, because she is holy. She must serve not one, but many. Before one gets into the waters, the river is praised, her permission taken and forgiveness asked for disturbing her. What more profound warning against environmental pollution can one think of?

The modern man is slowly becoming aware of the great dangers of denuding the forests, polluting the atmosphere and spoiling the natural water resources through dumping the effluents and sewage

into them. It is a healthy sign that through Nature Clubs, Wild-Life-Preservation, Social Forestry, Antipollution programmes, and expeditions of various kinds, man has in his own way started paying his attention to mother nature again. Long long ago, Indians had achieved all these and more at one stroke, by deifying our mountains and rivers so that they became objects of veneration and automatically remained unpolluted and unspoiled by man. In a country where religious fervour was the sustaining and strengthening force, the best way to awaken the people's conscience was to tag religious importance to facts of Nature or to elevate everything to Godhood.

In fact, in India, religion is not a mere ritual or philosophy but teaches a practical beneficent path of conduct consistent and in harmony and intertwined with nature. Any deviation may prove disastrous. This was a sure way to preserve the sanctity of Nature, to establish harmony and peace within and without, and to open man's heart to the Infinitude around.

This is the lesson India should continue to give to the world. Mountains and rivers, nay, the smallest of sand-grain that exists has a *sat*, a reality of its own; it is also a link in the chain of creation of which man is the crowning glory; it is also very much a part of the infinite Glory of the Lord which in ultimate analysis is nothing but one's own SELF.

Let us remember that only worshipping this Mother Vasundhara can we live in peace with Nature.

*"Samudravasane Devi, Parvatastanamandale,
Vishnupatni Namastubhyam, Padasparsam kshamasva me"*.

"O Devi, you are wearing the ocean as a clothing on your body. The mountains are your breasts. O Consort of Vishnu, I salute you and beg your pardon for having to set foot on your body for my routine activities."

In all humility, we bow our heads to these great mountains and rivers which have made India what she is.

This issue of the Kendra Patrika on the Mountains and Rivers of India, is a recognition of this great truth, of such universal importance and relevance.

It has been our effort to present in this issue, the glorious traditions associated with some of the important rivers and mountains. We are fully aware that in this process full justice has not been done to all the existing mountains and rivers of our vast country. Some reduction in the quantity of the contents' had to be made to ensure the speedy release of this issue.

M. Lashmi Kumar.

The Origin of Mountains and their Movements

The study of the worlds makes us think of eternity as we think of infinity And so is the case with our Earth also

V R KANDASUBRAMANYAM

It is said that the earth was formed by the slow condensation of a gaseous ring detached from the Sun Such a condensation results in the shrinkage of the gaseous mass The motion of rotation of the nebula or gaseous mass is accelerated The rotating mass of hot gas cools down to liquid state and then to solid state The mass later increases from age to age by the fall of meteoric stones and shooting stars continually

The Evolution

During thousands of centuries, the terrestrial globe so formed, rolled through open space in the condition of a great chemical laboratory A perpetual deluge of boiling water fell from the clouds upon the burning soil and rose in vapour again to fall With the fall in temperature, the vapour liquified and precipitated The terrestrial crust, so formed, was broken open by the convulsions of the central fire with thousands of vomiting flames and then closing The first lands that emerged from the universal Ocean were islets of arid and sterile granite (the grand-grand-father of all stones)

Later on, from the bottom of the sea, the first semi-fluid combination of carbon formed the rudimentary life form, the protoplasm Evolutionary process brought forth the numerous plant life and animal life in the course of centuries **The granite mass formed the core substance of all mountains. Plant life created the forests over them. The forests brought down the rain clouds and the rivers were born. In us, sources of food and water paved the way for the advent of living beings.** ★

Periodical earthquakes have altered the shape and size of the mountains The drifting land masses of the earth on the oceans around have also caused the rising up of the mountain ranges Thus, we have on earth so many mountains They are called 'Parvatas', echoing the sense of the word, '*Poorva-tama*' the 'most ancient'

Other Planets

Earth is not the only planet that has got mountains and valleys. Our neighbour, the Moon, excels us in its mountains The mountains of the moon are all of volcanic origin In the centre are the huge craters and around them are rounded annular valleys, the amphitheatres According to astronomer Schmidt, there are about 60,000 such craters, big and small, on both halves of the moon's sphere About ten mountains that are very high, have been mapped The highest of these, is Mount Leibnitz, 7,610 metres (24,970 feet) high There are mountains so strangely situated at the South Lunar Pole that the sun never sets on them. They are the Mountains of Eternal Light

Even though the moon is 49 times smaller than the Earth, the mountain amphitheatres are very spacious The circle of Clavius, on the moon is having a diameter of 130 miles. Unfortunately or fortunately, the hot lava of those volcanic mountains have dried up the innumerable seas of the Moon The earth's mountains are solid peaks, but the lunar mountains may be all hollow ones

Coming nearer the Sun in the inner circle, ★ we meet the planet Venus ★ The surface of the

planet is quite as uneven as that of the Earth. In the northern hemisphere, there are more mountains than in the Southern. The most elevated summits attain a height of 27 miles (44,000 metres). An atmosphere and water exist there also.

Going further up towards the sun, planet Mercury makes itself known to the observer. It is a globe of dark matter which shines by solar illumination. Its surface too is broken by enormous irregularities. Cordilleras is said to be a mountain with its highest peak rising to a height of about 63,000 feet.

On the other side of Earth away from the Sun, we have the planets, Mars, Jupiter, Uranus, Neptune, Pluto, etc. No details of mountains in these planets are so far available.

What about the Sun, the central figure of the entire solar system? It is a globe of fire. And so, if mountains are there on its surface, they could only be of a fiery type. Flames circling round the sun rise up as prominences. It has been observed that they reach a height much higher than the diameter of the Earth. These fiery prominences are veritable sheafs of fire, very ephemeral, they rarely last an hour; wonderful types of fireworks mark the nature of these flaming mountains.

The Motions

Thus, from a universal survey of the mountains in the Solar orbit, we have to conclude that mountains on Earth are the masterpieces of Creation. Mankind is really fortunate in this gift of God, Mother Nature. None of these mountains are stationary as they appear to be. The world we live in is called, 'Jagat', meaning, one that goes on moving.

Astronomers have attributed to our earth alone eleven types of motions in which we as well as the mountains, rivers and seas take part day in and day out. So far as mankind is concerned, it is only like a grain of dust adhering to the surface of an enormous cannon ball shot into infinity. Smoother than the barge on the limpid river, the earth, with all its load of mountains and other created beings, glides majestically in its orbit showing no perceptible trace of the powerful force which guides it. We are all safe on the lap of Mother Earth in her movements.

1 This terrestrial globe turns upon itself in 24 hours incessantly without feeling giddy. This is a daily motion.

2 It goes round the sun in a bigger orbit while keeping to its own rotatory motion. This is like the *anga pradakshinam* of a devotee, going round the temple corridors. This is annual motion.

3 It has its axial-rotation that shifts its pole among the stars. This is known as the precession of the equinoxes occurring once in 25,800 years.

4 The earth influenced by the Moon undergoes a monthly displacement in space, thus producing the 'parallactic inequality of the Sun'. This is a monthly occurrence.

5 Motion of 'Mutation' causing the axis of the earth to describe rapid small ellipses traced on the celestial sphere once in 18 years.

6 Variation in the 'obliquity of the ecliptic' at the rate of 46.5 seconds per century. ($1^\circ = 60$ mts = 60×60 seconds).

7 Variation of the eccentricity affecting the curve which the earth describes round the sun in an elliptical path.

8. There is the secular variation of the perihelion. This occurs once in 210 centuries.

9 Perturbations in all the above motions caused by the various attractions of the neighbouring planets, Venus, Jupiter, etc.

10. Change in the centre of the Earth's revolution due to the apparent displacement of the Sun itself along the centre of gravity and solar system.

11 Movement in a spiral path along with the Sun in space. Thus, it is said that 'our globe has never passed twice through the same place'.

Thus, Mother Earth is dancing in space with a elevenfold gait caused by the *Ekadasa Rudra Sakthi*, directing her steps. Rivers of milk flow from her mountain breasts to feed her children.

In spite of all these happenings, many of us are under the impression that the Earth is flat and motionless with the mountains sitting pretty over it and pouring its waters downstream to flood the Oceans! What a great *Maya*, illusory world we live in!



Rivers and Hills in Indian Culture—A Tribute

K V SOUNDARARAJAN

Geographers tell us that mountains and rivers have an inextricable relationship and together make life sprout, grow and prosper and create valleys, alluvial flats and sylvan luxuriance. The poet was eloquent about the sunset amidst the hills and grows romantic too. The architect of the past compared the concept of the splendid spired structures to the lofty crests of Mount Kailasa and the historian highlights the rise of civilisation as caused by the single physiomorphic impact of the hill, the piedmont and the riparian plain. Hinduism, Buddhism, Jainism, and even Christianity each placed its momentous monuments and events on the crests of hills to be worshipped and venerated by successor generations. In fact, the entire world revels in the hill-vale syndrome. Whatever had been developed, in fact, as the culture of India, is seen receiving its stamina from the majesty of the mountain and the life-sustaining perennial flow of the river. The religious literature is redolent with praise and reverence for these outstanding landmarks of Mother Earth.

The Sangam bards of the ancient Tamil Land, divided the land formations of the region into the hill, plateau, valley and the littoral and distinguished its fauna, flora, aviary, the mineral wealth and human activity cycle amidst these accordingly. The sound of the gurgling rapids flowing through the shingle beds of the mountain valleys, the roar of the waterfalls, the pellucid deep of the calmly flowing river in the plains, were music to the philosophic mind which sought harmony with the myriad moods of Nature. Seemingly, the almost inviolable strength of the hills and the always dynamic courses of the river, endlessly seeking to link the sky with its water-laden clouds, with the ocean, had etched in the minds of men the cyclic character of timeless life which is a tribute to their architect-creator.

Thus, strength and stamina, the kinetic energy of temporal actions, are embodied in

the hills and the potential bio-physical energy in the rivers, thereby integrating the Sankhya-Yoga principle of the Parama and the Jiva units harmonising in the macrocosm. The hill, in fact, is masculine and the river feminine and the inseparable fusion of their biosphere is also thereby emphasised. The hill (*achala*) also gave another facet of religious principle, namely, the unshakable symbolism of eternal, omnipresent, immovable, constant and everlasting Godhead (*atyassavagatasthanurachaloyam sanatana*). Correspondingly, the river with its seasonal moods in the annual cycle, is always figured out as a woman who is a virgin in the hills, flowered and consummated in the plains and fruitful in the alluvial deltaic *sangama* with the ocean. The maturity and the enjoyment of the river at the advent of the rainy season has been celebrated with festivity all over the country. The advent of the Ganga (*Tripathaga*) from celestial heights hurtling through the ethereal sky has been immortalised in the Bhagiratha-Gangadhara legend and gave her the name of Bhagirathi. The Ganga indeed became an archetypal river of sanctity for the whole of India by its thrice-blessed associations with the *jata* (matted and twisted hair-locks) of Siva, the ablution-making hands of Brahma and the washed feet of Hari, through the incarnation along with the Bhagnatha legend stated above. In a highly ornate poetic imagery, Pallava Mahendravarman, in his Tiruchirappalli upper rock-cut cave record (on the Rock-Fort Hill), visualises that the confirmed *nadi-priya* lover of river that Siva was, the daughter of Himavan (Parvathi) was loth to permit Siva alone, to be established by the Pallava King in the sanctum of his cave-shrine lest the God should fall head over heels in love with the Kaveri river flowing just below the hillock, hastened from her Kailasa abode to take residence along with her fickle husband in the rock-cut temple as she was already aware of the pampering that her Lord had shown to Ganga by carrying her on his hair-locks, and to substantiate the imagery, the king got an exquisite *Gangadhara* panel carved on the mandapa wall of the cave just by the side of his inscribed record. In the *Gangadhara* iconography of the Chola period (of which many scores of sculptures exist in Tamilnadu such as the more

famous and well-known examples at Kodumbalur, Thanjavur and Gangaikondacholapuram), it was customary to depict Siva flamboyantly carrying Ganga on one of his separated locks of hair and at the same time, seeking to placate Parvathi standing by, assuring her of his fidelity to her, by amorously caressing her chin with his fingers. The Rashtrakuta kings who in their whirlwind campaigns took their victorious armies up to and across the Gangetic plains and celebrated the victories by a sacred bath at the Prayaga, permanently, as it were, commemorated this notable achievement by carving out a separate cave-temple for the triple river Goddesses, Ganga, Yamuna and Sarasvati, at Elapura (Ellora), their then capital, as now seen in the north-west corner of the courtyard of the grand Kailasa monolith. The entire range of upper Indian temples and even those of Deccan got into the habit of showing Ganga and Yamuna along with attendants, as flanking the door of the sanctum, on the jambs of the same.

Rivers as Sacred Spots

Rivers which sharply turned their courses, in a westerly and northerly stride, from the normal easterly or southerly direction, are considered as fit at those spots for the performance of the *Pitrisaddhas*, as at Gaya, or the *Matrisaddhas*, as at Matri-Gaya at Sidhpur in Gujarat, the old capital of Jayasimha Siddharaja Solanki. The Sarayu river (on which Ayodhya stands) is held so sacred at its confluence with the Ganga, that Kalidasa records that whoever discarded his mortal coil at that spot of the river is immediately registered in the celestial book as fit for residence in Devaloka and that was how Aja, the father of Dasaratha, departed from this world (*'Turiye toyavyatikarabhave, Janhukanya—Saravyoh dehatyagadamarganana ekhyamasadya sadyah'*). The reference in *Kumarsambhava* by Kalidasa to Himavan, as the divine king of hills, serving as the measuring rod of the land between the eastern and the western seas, is well-known. (*purvaparasu varimadhi-vigahya sthita-prithivya va manadandah*) Seshachala, Simhachala, Vindhya-chala, Arbhudachala (Mount Abu), Arunachala and many others are great centres of divine immanence,

worshipped by various religious communities. The legends connected with the hills in the *Puranas*, are legion. The hill with its forest-clad herbal sanctuary had, from time immemorial, attracted people who sought to re-discover their selves in contemplation and introspection.

Rivers and hills, besides, had always been the natural boundaries of regions and kingdoms, owing to their forming arterial lines of communication and interaction, as well as strategic defensive lines.

Religio—Cultural Conscience

Lord Krishna's association with river Yamuna at Mathura is part of our rich legacy of the *Bhagavata* as well as the life-style of Vrajabhumi till this day, centred around Govardhana hill and Gokula-Brindavana. This brings another aspect of Indian traditional outlook which has worshipped hills and rivers as the collective religio-cultural conscience and memory of the past heritage. This is reflected in the naming of men and women after the hills and rivers like Venkatachala, Palani and Govardhanari or as Godavari, Krishnaveni and Yamuna variously. In any event, it is obvious that there is a tendency towards a humanisation of the rivers and hills already in the legends of the hoary past, before their apotheosisation in religion and translations thereof in art.

Rivers have also another foundational facet of Indian traditional life, namely, for their potentiality as anti-pollution agencies in rituals, in relation to the different pollution levels of cloth, metals, leather, etc., used in daily life. After any pollution by events of birth or death, it is the bath in a river that removes the pollution. The entire pollution of Indian ritualism is in fact related to water and bathing. The concept of physical cleanliness and sanitation are no doubt at the root of such traditions but they had often hardened into rigid planks for separation of people from one another. The matter requires deep research regarding its socio-cultural meanderings from original positions and ethnic connotations. The rivers and the hills of our land have indeed shaped our cultural ken and destinies more than we are aware of.



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The Mountain Systems— Meru - Ganga - Complex

S. M ALI

Meru, the mount of Brahma, is the key to the Puranic Geography of the world. The *Vedas* do not mention Meru. The *Taittiriya Aranyaka* refers to Maha Meru, without locating it. The Buddhists, the Jains, the Persians, the Greeks, the Chinese, the Jews and the Arabs—all refer to Meru in their cosmography. The Zoroastrians speak of Al-Burj equal to Puranic Meru. The Mountain of God is also alluded to in the *Psalms*.

The Meru, in the Jambu Dwipa, is 84,000 yojanas high, 16,000 yojanas deep below the earth's surface. Its summit is 32,000 yojanas in its diameter and at its base 16,000, thus, it is like the seed cup of a lotus, the seat of Brahma. These descriptions vary from scripture to scripture.

Central Asian Drainage

Considering the descriptions of Meru in the *Puranas*, it may be safely identified with the plateau of Pamir. This Pamir is the focal point of Central Asian drainage. Major rivers flow from it towards West (*Oxus*), South (*Indus*), East (*Tarim*) and North (*Syr Daria*). It is also flanked by east-west mountain chains to the north and south. The mountain ranges round

which these rivers flow have also their present equivalents in the similar ranges of Central Asia. They are listed below.

Neela	—	Zarafshan-Trans-Alai-Tien Shan chain.
Sweta	—	Nura Tao Turkistan-Atbashi chain
Srngavan	—	Kara Tao Kirgiz Ketman chain.
Nishada	—	Hindukush-Kunhan chain.
Hemakuta	—	Ladak-Kailash-Trans-Himalayan chain
Himavan	—	The Great Himalayan Range

These identifications are corroborated with the detailed descriptions of the Puranic mountains in *Vayu Purana*. *Vayu Purana* also gives a list of 43 rivers in Badrasura (the basin of Tarim and North China), including the River Sita (Tarim-Havangho). Another list of 43 rivers is in Ketumala (the basin of Oxus) including the Oxus River. The sources of the rivers are the lakes adjoining the mountains around the Meru as listed below:

Mountains	Lakes	Rivers
1 Hemasringa (Kuta)	Sayana	Jyotismati } Manaswini }
2. Nishada	Vishnupada	Gandharvi } Naawali }
3. Meru	Ghandarvasha	Jambu
4 Nila	Payoda	Pundarika } Payoda }
5. Sweta	Uttaramanasa Madhuvatsarovara	Jyotsna } Mrigakanta }
6 Kuru Country	Rudra Jaya & 12 more	Santa } Madhavi }

In the present geographical set-up, the above lakes take different names as outlined below.

1. Sayana is Nak Tso
2. Vishnupada is Chakmakim
3. Uttaramanasa is Karakul
4. Madhuvat is Iskandakul

The Different Stages

Just as the Meru which is the central pivot of the mountain ranges, so also, river Ganga happens to be the pivot of the River systems originating from Meru. The *Puranas* refer to three stages in the evolution of the Ganga

a. *The Celestial Stage*. The Ganga is compared to the 'Milky way', the 'Akasa Ganga' or the 'Starry River' of the heavens

b. *The Snowy Stage*: The Celestial River descends from the sky in the form of snow. It remains suspended on the mountainous region above the snow line. It rests on the matted hairs of Siva of Kailas. It is just a belt of snow.

c. *The Flowing Stage*. The snowy river starts flowing first as a glacier round and round the Meru before it melts into a watery stream. All rivers originating from the snowy peaks of Meru and its mountains are manifestations of the Holy Ganga. There are many Gangas, Maha Ganga, Ganga, Krishna Ganga, Vishnu Ganga, Kali Ganga, Gauri Ganga, Dhaul Ganga, etc.

To the north of Kailasa, there is a lake, Vindu Sarovara. Nalini, Hladini, Pavan are the three rivers flowing east of this lake. Sita, Chaksu and Sindhu flow west of this lake. Bhagirathi flows south. These seven are the seven streams

of watery Ganga. This lake is associated with King Bhagiratha's Tapas spot.

Vindu Sarovar

In today's parlance, the east-flowing rivers are named Yangtze, Mekong and Salween. Indus, Shyok and Yarkand are the west-flowing rivers. The southern river still bears the name Bhagirathi.

The snow-belt from the Pamirs (Meru), covers the northern Himalayan region including the Karakorum. This snow-belt moving south, extended over the high ranges of Tanghla, Aling Kangri and Nychenthangla lying north-west to east-south-east of Tibet. *Puranas* refer to these as Gaura, Hiranyasringa and Soma. The basin between Aling Kangra and Nychenthangla, was once a big snow-field as a lake full of particles of frozen water rightly named 'Vindu Sarovar' (Vindu=Bindu=particle). The Goddess Tripathaga, i.e., the Ganga was confined in the tresses of Lord Sankara and she was unable to move forward on account of the glacial conditions. The flow started in the post-glacial period. How grandly the physiological and geographical truths have been clothed in Mythology in the *Puranas* is a thing to be wondered at!

This then is an account of the Meru-Ganga-Complex of the Jambu-Dwipa, the great Asian Continent.

— Abstract by V.R.K.

REFERENCE:

The Geography of the Puranas by S M Ali, F.N.I.



Mountains and Rivers in Valmiki's Vision

Srimad Ramayana of Valmiki is one of the two great 'Itihasas' of our country

The search for Sita Devi by the hosts of Vanaras all over Bharat, gave an opportunity for the poet to describe the location of the numerous mountains and rivers therein. Given below are the mountains and the riversides to be searched for

This account starts with the command of the Monkey King, Sugriva, to the four captains of his army to search for Sita in the four directions (North-East-West-South) and return within a month bringing news of their findings
The Eastern Sector Leader Vinatha

Rivers Bhagirathi, Sarayu, Kausiki, Kalinda, Yamuna, Saraswathi, Sona, Maninibodakam, Mahi, Kala Mahi, Brahmamala

Mountains: Sisira, Kootasalmali, Jabharoopasila, Kethusthaala, Udaya Parvatha, Saumanasa.

The Southern Sector: Leader Neela, Angada

Rivers Narmada, Godavari, Krishnaveni, Mahanadi, Varada, Kaveri, Tamraparni.

Mountains Vindhya, Mahagiri, Malaya, Mahendra, Pushpithaka, Suryavan, Vridyutha, Kunjara, Rishaba.

The Western Sector Leader: Sushema

Rivers: (Nothing special).

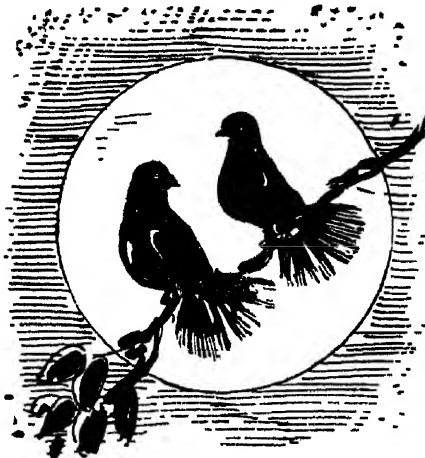
Mountains Hemagiri, Pariyatia, Vajra, Chakravan, Meghavan, Meru, Uttara-parvatha, Chitra Vedhika.

The Northern Sector. Leader: Sathavali.

Rivers Sailoda.

Mountains Himavan, Kala, Sudarsana, Devasaka, Kailasa, Krouncha, Kamasila, Mainaka and Somagiri.

— Compiled: V R.K.,



GEOGRAPHY IN KALIDASA'S WORKS

KALIDASA, was a poet of unrivalled and many splendoured genius. In his description of nature, we get a glimpse of the various aspects of geography. Besides the phenomena of physical geography, we get sufficient references to economic, human and bio-geography. In many of his works, particularly in the RAGHUVAMSHAM and MEGHADUTAM, we get a detailed description of the various JANAPADAS or kingdoms of contemporary India. The contents of his works act as a mirror of life reflecting the geography of the country and customs and manners prevailing in his times.

D D P P. SATPATHY

.. The features of physical geography like mountain peaks, mountain slopes, plains, plateaux, caves, springs, waterfalls, passes, rivers, lakes, oceans and seas have been used several times in Kalidasa's writings. Kalidasa was aware of the fact that all big rivers met with the oceans or seas.¹ He has mentioned about the vastness² of the water bodies—the oceans. He has also referred to the existence of hills in the oceans³.

Kalidasa had also observed the fluvial processes of erosion and deposition. According to him, during the rainy season, the river water erodes sediment from both the banks. During this period, the water level in the rivers is sufficiently high and the rivers exhibit bankful discharge. The river water, particularly during the month of *Śravana*⁴ (mid-July to mid-August), remains saturated with the sediment. He has also mentioned about the formation of deltas at the mouths of the rivers.

Besides the features produced by fluvial erosion and deposition, Kalidasa also has referred to the landscapes produced by corals⁵. Glacial topography and the formation of rivers due to the melting of glaciers, etc. have been described by him. By referring to the mirage

(*Mṛgajala*), he has shown his acquaintance with desert ecology

Landscape Painting

Kalidasa was a past master in landscape painting. In *Meghadutam* (*Purvamegha*), we find a detailed geographical description of the Vindhyan and Malwa Plateau regions. In *Kumarsambhava*, he has described the Himalayan region in detail, highlighting its various aspects of physical, economic and human geography. In *Raghuvamsham*, while describing King Raghu's *Digvijaya* and *Indumati's swayamvara*, he has tried to present a detailed spatial location of the different kingdoms or *janapadas* of contemporary India with their geographical peculiarities.

In *Purvamegha* (first part of *Meghadutam*), we come across about 32 names of places, almost half of them being the names of rivers, and the rest being the names of mountain ranges, hills, plateaux, capitals and other towns of some regions, etc. Let us attempt to identify the places mentioned in *Meghadutam* in the present geographical set-up of India.

Ramagiri

This is the place according to the poet where the cursed and banished *Yaksha* was staying.

1. Raghu, 13 9
2. Raghu, 13 7
3. Raghu, 17 41.
4. Raghu, 6 52
5. Raghu, 13 13.

According to Mallinatha, the famous commentator on Kalidasa's works, it is the present Chitrakuta mountain which is situated on the bank of the Ganga south of Allahabad in the Banda district of U.P. But Wilson⁶ identified it with the present Ramtek mountain situated to the north of Nagpur and which is simply a Maratha equivalent of the Sanskrit Ramagiri.

Malakshetra

This is identified with the present Malwa Plateau. According to Chaturvedi⁷, it stretched from the origin of the river Narmada to the neighbourhood of the Vindhya. It was a part of the former Rewa State. Mallinatha takes "*Mala*" to mean "a plateau or an elevated hilly spot". However, Wilson observes: "It is not easy after the lapse of ages to ascertain precisely the site of several places enumerated in the poem before us. The easterly progress of the cloud and the subsequent direction by which it is to reach the mountain of Amarakuta, prove that the place mentioned here must be somewhere in the vicinity of Ratanpur, the northern half of the province of Chhattisgarh. The only modern traces that can be found of it are in a place called Malwa, a little to the north of Ratanpur". Perhaps, he meant the Malwa Plateau region by "*Malakshetra*" with which he was thoroughly acquainted.

Amarakutaka

This is identified with the present Amarakutaka mountain which lies to the south-east of the Vindhya. Perhaps, Amarakutaka is the corrupt version of Amarakutaka. It is also known as the Somapavata and Surathadri⁸. This hill is a part of the Mekhala hills in Gondwana in the territory of Nagpur in which the rivers Narmada and Son take their rise⁹. This mountain range is situated in the former princely State of Rewa in the Bundelkhand region and in the present State of Madhya Pradesh. It forms the easternmost extremity of the Maikal range. This mountain range which attains an elevation of 1,057 metres is a sacred place for Hindus as it contains the sacred Chandikatirtha¹⁰.

Narmada

This is the Namados of Ptolemy and is identified with the Peninsular river of the same name which originates from the Amarkantaka mountain and empties into the Arabian Sea near Broach after flowing for a distance of 1,312 kms westward between the Vindhya range of hills to the north and the Satpuras to the south. Its other names are Somodvaba, Rewa and Mekhalasuta. Kalidasa has mentioned the rock-strewn bed of this river. According to him, it is narrow at the foot of the Vindhya¹¹. He might be pointing at the narrow deep gorge at Hamphal.

Dasarna

This Kingdom¹² where the Dasarna river (modern Dhasorn river) was flowing, existed to the south-east of the Vindhya region or the Madhyadesha. According to Wilson, it is the Dosarene of Ptolemy Periplus and may be identified with the modern Chhattisgarh region. This region forms the eastern part of Malwa. The Dasarna river (little river with ten tributaries) used to flow in this country. Its name is mentioned in *Anguttara Nikaya* and in the *Mahabharata* (II, 5-10).

Vidisha

This was the capital of the Dasarna country and is identified with modern Bhilsa which is located 26 miles north-east of Bhopal on the bank of the Betwa river.

Vetravati

This is identified with the modern Betwa river. It rises on the north of the Vindhya chain and pursuing a north-easterly course of 340 miles traverses the Malwa plateau and passing through the south-west corner of Allahabad, falls into the Yamuna below Kalpee. We find the mention of the river in the *Markandeya Purana*. According to the *Puranas*, this river, receiving numerous tributaries before joining with the Yamuna, originated from the Paripatra of Pariyatra mountains representing a western branch of the Vindhya range, which formed the western boundary of the ancient kingdom of Avanti and may be taken to extend north-east through Rajputana under the known name of Aravalli¹³.

6 H.H. Wilson, *Vishnu Purana*

7 S.R. Chaturvedi, *Kalidasa Granthawali*, notes at the end.

8 Pargiter, *Markandeya Purana*, ch. 57

9 B.C. Law, *Mountains and Rivers of India*, National Committee for Geographers, Calcutta, 1968; p. 31

10 *Padma Purana*, ch. 133, v. 21

11 Purva Megha, 51.

12 Lit. the country having ten strongholds or citadels

13 B.C. Law, "*Rivers of India as in Ancient Literature*", in *Mountains and Rivers of India*, Calcutta, 1968, p. 203

The Nich Hills

This is a mountain in the vicinity of Vidisha. This is one of the branches of the Vindhyan range. It is so called because of its low elevation

Ujjayini

This was the capital of Avanti and is identified with modern Ujjain. Its other ancient names were Avantika and Pushpakarandini¹⁴. It is situated to the south of the river Sipra. Its name is mentioned in the inscriptions of Nasik cave. According to Ptolemy, it was the capital of King Chastana (A.D. 150). "Hsien Tsang describes the capital of U-She-Yen-na or Ujjain, as 30 li or 5 miles in circuit, which is only a little less than its size at the present day"¹⁵. Modern Ujjain is about a mile south of the ancient city. It is one of the seven sacred cities of India¹⁶. About this town Wilson remarked that "few cities perhaps can boast of a more continuous reputation, as it has been a place of great note from the earliest periods of Hindu tradition down to the present day". There is a vivid description of this ancient seat of Indian culture in the *Avanti Khanda* of the *Skanda Purana*. From the intimate description of the geographical environment of this town by Kalidasa, it seems that he must have lived here for a pretty long time. The Mahakal temple of this ancient town is still there as a witness of its glorious past. Due to its antiquity, this temple has become a geographical entity.

Bana Nadi

Although Mallinatha takes this in the sense of 'forest' rivers in general, some other commentators have thought it to be a proper name and have tried to identify it with the Naba nadi or Naga nadi. The latter name is preferred by Wilson who thinks it may be the name of a small river west of the Betwa and is also named as Parvati which originating from the Vindhya chain runs north-west till it joins another called the Sipra and the two together fall into the Chambal. According to Wilson, Parvati and Naganadi are synonymous.

Nirvindhya

This is a small stream which rises in the Vindhya and flows northward between Ujjayini

14. Hem Chandra

15. A. Cunningham, *The Ancient Geography of India*.

16. Ibid

and Vetravati. Although in the *Matsya*, *Vayu* and *Brahmanda Puranas* it has got the same name but in some other scriptures it is known as Newaj. Its present name is Newaj.

Sindhu

There is a controversy about the identification of Sindhu river mentioned in *Puramegha*. Some people think that there is only one Sindhu river in India which is known to the world as Indus. Others, however, believe that by Sindhu, Kalidasa referred to the river Kali Sindhu in Malwa which springs from Bangi and falls into the Chambal river. According to Nandargikar "the little Sindhu which springing from Devas and passing along with many other minor streams, by Ujjain, falls into Chambal."

Avanti

It is the name of a country which existed to the north of the Narmada river and formed the eastern part of Malwa Plateau. This country was bounded to the west by the Chambal river, to the north by the kingdoms of Mathura and Jaihoti, to the east by Maheswarapura and to the south by the Satpura mountains running between the Narmada and the Tapti. This country was about 900 miles in circuit. Avanti has been called Malava since the seventh or eighth century A.D. Panini mentioned it in one of his *Sutras* (IV, I 176). It was also mentioned by Patanjali (IV, I 1936) and the authors of *Skanda Purana* (ch I 1923) and the *Bhagavata Purana* (X 45 31).

Sipra

Ujjain is situated on the banks of this river. Its name in the *Vayu Purana* is Madra; in the *Matsya Purana* it is Ksipra, in the *Brahmanda Purana*, it is Madra, and in other *Puranas*, Sighroda or Sighra. From this very name, it seems that it was a swift flowing stream. This river rises in the Paripatra range. It flows into the Chambal a little below Sitaman.

Vatsa

This country was situated to the north of the Vindhya. Kausambi was its capital which is identified with modern Kosam, situated on the Yamuna and is about 38 miles from Allahabad above the Yamuna river. Anguttara Nikkaya mentions the kingdom of Vatsa or Vamsa as one of the sixteen *mahajanapadas* of India. It is also mentioned in the *Mahabharata* (II, 30, 10-11) and the *Harivamsa* (29.73).

Gandhavati

There was a small stream of this name near Ujjayini. In course of time its size and importance decreased considerably. Hara Prasad Shastri observes thus "What was a beautiful small stream in Kalidasa's time is now a drain running through the heart of the modern city"

Gambhira

Like the Gandhavati this is also a small stream in Malwa. Its name has been mentioned by Jinasena in his *Adipurana* (ch 29). It is a tributary of the Chambal.

Devagiri

Wilson identifies it with Devgad situated to the south of Chambal at the centre of the Malwa Plateau. Dr. Fleet thought it to be situated about 60 miles to the south-west of Jhansi. The temple of Skanda (Kartikaya) is situated here. H.P. Shastri observes that "the hill is still there and the deity is still there worshipped by the *ahirs* and *khanderao*".

Charmanvati

It is identified with the modern Chambal river. It was also known as the *Charawala* or *Shivnad*. The ancient Dasapura town was situated on this river. This is a tributary of the Yamuna. It rises in the Janapaw mountain of Indore region and falls in the Yamuna. According to a Puranic legend, this river was formed by the blood of numerous cows which King Rantideva used to sacrifice every day to feed the guests. According to the *Mahabharata* and the *Puranas*, this king was "enormously rich, very religious, charitable and profuse in sacrifices" (Dawson).

Dasapura

It is identified with the modern Dasor of Mandasor on the left or north bank of the river Sivana and is the chief town of the Mandasor District in Scindia's dominations in the western Malwa Division of Central India. It must have been an important city in ancient times as it is mentioned in the *Mahabharata*, the Nasik inscriptions and the Gupta inscriptions¹⁷. Wilson identified it with the modern Rantipore or Rantampore as it was the capital of King Rantideva in ancient times. This site lying to the north of the Chambal is in the line from Ujjain

to Thaneshwar and this lies in the course of the cloud's progress (*Meghadutam*). This town is supposed to be the native place of poet Kalidasa. H.P. Shastri, from Kalidasa's detailed description of the geographical environment in and around Dasapura remarks that "more intimate acquaintance with this part of the country than with the rest of Malwa. his native city was either Dasapura or some place near it."

Brahmavarta

This ancient holy land existed between the divine rivers Saraswati and Drisadvati¹⁸. This region lay to the north-west of Hastinapura and contiguous to Kurukshetra.

Kurukshetra

This was the site where the Mahabharata war was fought between the Pandavas and the Kauravas. This is one of the sacred places of India and lies a little to the south-east of Thaneshwar and is drained by the river Saraswati. To the south-east of *Kuluta* beyond *Trigarta*, lay the district of Kurukshetra. In the *Manusmriti*, it is described with other districts¹⁹. In its limited sense, it is the tract near the holy lake still known by the same name to the south of Thaneshwar. In the larger sense, it extended from the south of Saraswati to the north of Drisadvati²⁰ (Anand Mohan Barua). This flat and extensive plain tract now lies to the north of Delhi in the State of Haryana.

Saraswati

This was one of the sacred rivers of *Uttarapatha*. This historical river is particularly holy in Kurukshetra²¹, the north-west part of which is drained by this river. The Saraswati is described in the *Milindapanha* as a Himalayan river and its source is traceable to the Himalayan range above the Simla Hills²². This river is lost amidst the sands of the northern part of the Rajputana desert at some distance from Sirsa. Now, it is a subterranean river whose characteristic is aptly described in *Siddhanta Siromani*²³ (*Goladhyaya-Bhuvanakosa*). Although it was rather out of the path of the cloud's

18. Manusmriti, II-17

19. Manu, S II, 19.

20. Mahabharata, "Vana Parva", 83.4

21. Mahabharata

22. B.C. Law, "Rivers of India as in Ancient Literature", *Mountains and Rivers of India*, Calcutta, 1968, p. 185.

23. Siddhanta Siromani

17. M.R. Kale, *The Meghaduta of Kalidasa*, Motilal Banarsidas, 1969, p. 86

advancement (*Meghadutam*), yet Kalidasa perhaps could not resist the temptation to mention this river which occupied a unique place among all other Indian rivers

Kanakhal

It is the name of the sacred place near Haridwar where the Ganges descends on the plain lands after traversing a great distance in the Himalayas taking its origin from the Gangotri glacier. Mallinatha takes it to refer to the mountain there through the gorge of which the Ganga descends. It is mentioned in the *Mahabharata* as a mountain²⁴. It is called the gate of the Ganga²⁵. Wilson observes, "It is rather extraordinary that Kalidasa should have omitted the name of Haridwar and preferred Kanakhal, especially as the former occurs in the *Puranas*". It is also conjectured that gold was found²⁶ in that place and the word Kanakhal is the corrupt form of "Kanakakhal".

Ganga

This sacred river is the life-line of northern India and is the heroine of numerous legends of the *Puranas*. Kalidasa has referred to this river as Janhu's daughter. Wilson remarks, "Janhu's daughter is the Ganga or the Ganges river which after traversing its way through an extensive tract of mountainous country, here first enters the plain". By here he means at Kanakhal.

Himalaya

This is the invincible natural wall to the north of the country stretching from north-west to south-east, for a distance of about 1,600 miles. The Gangotri glacier, the place of origin of the Ganga river, is located here. It contains several snow-clad, lofty peaks and is the birth-place of almost all important rivers of northern India.

Sangama

This is the confluence of the three sacred rivers of India—the Ganga, the Yamuna and the subterranean Saraswati at Allahabad. This is a sacred place of the Hindus and here according to *Puranasamvasa*²⁷ the Ganga is not easily accessible. It has been nicely described in *Raghuvamsham* (13 54-58).

Charananyasa

The Harkī-Pairi or the feet of Hara which is a small hillock at Haridwar may be identified as *Charananyasa* because in *Sambhurahasya* it has been referred to as *Sricharananyasa*.

Krauncharandhra

This is a mountain pass and is identified with the Mananiti pass in the Himalayas. It is one of the six important passes of the Greater Himalayas. In the *Taittiriya Aranyaka* (1 31.2) the name of the Krauncha mountain is mentioned. According to Pargiter, this mountain appears to be a part of the Mainaka mountain range in the Greater Himalayan mountain system. According to the *Ramayana* (*Kiskindhakanda*, ch 44), it was a part of the Kailasa mountain where lake Manasarovar exists. It has also been mentioned in *Harivamsa* (viii 941-42). However, the creation of the Krauncharandhra is related to the heroic deeds of the two famous heroes of the *Puranas*—Lord Kartikeya and Lord Parasurama. This pass lying in Krauncha Parvata provides passage to Tibet from India. It is also known as the *Hansadwar*, the gate of the flamingos, because it provides a passage to the flamingos from central and northern India to lake Manasarovar during the rainy season.

The Kailasa Mountain

The Kailasa mountain is one of the three mountains of the trans-Himalayan zone described in the ancient literature of India. It is one of the highest peaks (6,714 m) of the Greater Himalayan Zone. It is supposed to be the abode of Lord Shiva. The whiteness of its snow-capped peaks has been compared to the accumulation of loud laughter of Lord Shiva²⁸. This mountain is located about 40 kilometres to the north of the Manasarovar. It is the Kangrinpoche of the Tibetans and may be identified with the Vaidurya Parvata. It is also referred to as the Hemakuta²⁹. Literally, Kailasa Parvat means the pleasure-mountain. A detailed description of this mountain is found in *Kumarasambhava*.

Manasarovar

This sacred lake is situated between the Himalayas and the Kailasa mountain. It is also called the Brahma Sara³⁰. According to

24. *Mahabharata*, "Vana Parva", cxxxv 5.

25. *Harivamsa*.

26. *Katha Sarita Sagara*, III 4 5.

27. *Puranasamvasa*.

28. *Purva Megha*, p. 61.

29. *Mahabharata*, Bhismaparva, ch.6 of Kalidasa's *Abhigyan Shakuntalam*, p. 237.

30. *Raghuvamsham*, XIII, 60.

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Valmiki's *Ramayana*, the ancient river Sarayu or the present river Gogra originated from it. But in reality no such river originates from it. The river Sutlej flows from another lake of larger dimension called the Ravana Hrada which lies close to the west of Manasa.

Jambudiva-Pannatti

This traces the source of the four great rivers called the Ganga, the Rohita (i.e. the Lohitya or the Brahmaputra), the Sindhu (Indus) and the Harikanta to the twin lotus lakes (Padma Hrada) one on the side of the lesser and the other on that of the Greater Himalayan range.³¹ The Jaina lotus lake is no other than what is called the Bindusara in the great epic. *Anatotta* in Pali literature and Manasarovar in popular parlance, it is the favourite haunt of the flamingos which migrate to it at the commencement of the rainy season.

Alakapuri

It is very difficult to identify this town now. According to the Puranic accounts, it was the capital of Kubera, the god of wealth and the regent of the north. According to Kalidasa, it was situated on the slope of the Kailasa mountain. It is so called because of its grandeur. The *Brahmanda Purana* and the *Bhagavata*³² have described its splendour, grandeur and wealth. Some commentators think it to be a fictitious city and Kalidasa has practically described the grandeur of Ujjayini in the name of Alaka.

Among the 32 places mentioned above, 16 are in or in the neighbourhood of the Central Provinces of India. It seems that the poet was well acquainted with the Vindhya region which compelled Hara Parsad Shastri to believe that the poet had shown great partiality to the region lying to the north of the Vindhyas which is at present known as the Malwa Plateau and Kalidasa has described the same as the Malakshetra.

In the *Raghuvamsam*, Kalidasa has given a vivid geographical description of India—its important kingdoms of *janapadas* mountains, rivers and lakes. We find references of the geographical place names on three occasions in this epic. King Raghu's *Digvijay* (canto 4), *Indumati's swayamvara* (canto 6), and the aerial journey of Lord Rama and Goddess Sita over land and sea (canto 13). Kalidasa inherited some geographical names from Valmiki whom

he has faithfully followed in the *Raghuvamsham*, barring a few deviations in detail. In this great epic, we get the descriptions of the snow-clad Himalayan ranges, the monstrous beasts of the watery wastes, the Gangetic alluvium and many other aspects of physical geography. Here, we also find a glimpse of the varied people of different regions of India and their cultures and customs. Besides Valmiki's *Ramayana*, he must have taken some place names from the Puranas as well. From these descriptions we get an idea of the India of Kalidasa's time. King Raghu commences his campaign from Ayodhya which was his capital of Uttara Kosala. From there, he proceeds to the east where he subdues the *Sumhas* and the *Vangas*. Crossing the Kapisha river, he moves along with his army towards the South. He wins over the kings of *Utkala*, *Kalinga* and *Pandava*. Then he crosses the *Sahyadri* and subjugates the *Aparanta* districts along the western coast of India. After that he makes a northward journey along the coastal route. After crossing the *Trikuta* mountain, the deserts of Rajaputana and Baluchistan regions, he reaches *Parasya* and defeats the "Parasikas". He crosses the *Sindhu* river and reaches the lands of *Kambojas* and *Huns* and vanquishes them in a fight. Then he reaches the Himalayan region and overpowers the *Utsava Samketas*. Then leaving aside the Kailasa Mountain, he moves east and reaches *Pragjyotisha* and *Kamarupa* kingdoms which offered no resistance and presented Raghu with various forest products. Thereafter he came back to his capital and thus completed his cherished *Digvijaya*. Let us try to identify the places mentioned in this epic with the modern names.

Sumha

This may be identified with the present Rarh region of West Bengal, occupying the plains to the north of the Damodar river. Kale thought that the *Sumhas* lived in a country abounding in cane-plants which grow well along the bank of the Ganges.

Vanga

This country is identified with modern Bangladesh or erstwhile East Pakistan and former East Bengal.

Gangasagar

This is the place where the Ganga meets with the Bay of Bengal. This is one of the sacred places of the Hindus. Every year during *Makar Sankranti*, a big fair is held here. To mark

31 *Jambudiva Pannatti*.

32 *Bhagavata*, II 9

his victory, King Raghu erected pillars³³ on the delta of the Ganga and on the islands near Gangasagara

Kapisha River

This is identified with the modern *Kangsabati* or *Kasai* river. Originating in the Chota Nagpur Plateau and flowing through the southern part of the Midnapore district of Bengal, it empties into the Bay of Bengal.

Utkala

This is identified with the northern part of Orissa. It was also known as the *Odradesa* and stretched between the lower course of the Suvarnarekha river to the north and the Mahanadi to the south. It was bounded on the west by Gondwana, on the north by Jashpur and Singhbhum districts, on the east by the sea and on the south by the Ganjam district. This *janapada* was approximately 1,167 miles in circuit³⁴

Kalinga

This is the *Kie-ling-kia* of Hsien Tsang. It roughly extended between the Mahanadi in the north and Godavari in the south. Its circuit was approximately 800 miles. It was famous for beautiful elephants, coconut and betel groves.

Mahendragiri

This is identified with the modern Eastern Ghat ranges. Perhaps, along with the ocean it was the most prominent geographical feature of Kalinga and for that reason Kalidasa styles the king of Kalinga as the lord of the Mahendra³⁵ and the Mahodadhi (Bay of Bengal). The Mahendragiri is referred to as separating Ganjam from the valley of the Mahanadi. It has been mentioned in the *Yoginitanta* (2.4 128ff). In *Vishnu Purana* it has been referred to as the source of the Rushikulya River. Pargiter thinks that this mountain range should be limited to the hills between the Mahanadi, the Godavari and the Wainganga and "may perhaps comprise the portion of Eastern Ghats north of the Godavari."³⁶ According to Bana³⁷ it joined with the Malava Paravata. Besides its econo-

mic importance, the most characteristic feature of this mountain is that: "it has preserved its name unchanged from the time of the composition of the *Mahabharata* to the present day".³⁸

Kaveri

This is the sacred river of South India. It originates from the Western Ghats (Sahyadri), and flowing south-east through Karnataka and Tamilnadu falls into the Bay of Bengal.

Malayachala

It is the *Bettigo* of Ptolemy and is called *Podiger* or *Padigar* in Tamil. Pargiter identifies it with the southern part of the Western Ghats from the Nilgiris to Cape Comorin. It is noted for its pleasant cool breeze. It abounds in black pepper³⁹ creepers.

Pandya

This was the southernmost kingdom of India which was noted for its pearls.⁴⁰

Tamraparni

This river "must have flowed below the southern boundary of the kingdom of Pandya and may be identified with the modern *Tambra-vani* or with the combined stream of this river and the Chittar".⁴¹ According to Ptolemy, the port of *Korkai* (modern Kilakarai) was situated at the mouth of this river. "This may justify us in identifying it with the Gundur, the name under which the combined water of three streams flow in two streams into the sea."⁴² This river originating in the Malaya range flows mainly in the Tirunelveli district of Tamilnadu and empties into the Bay of Bengal.

Dardura Hill

This was a part of the Western Ghat range and formed the eastern boundary of the former Travancore State. It is situated to the south of the Kaveri river.

Sahyadri

This is identified with the Western Ghat range stretching from the Tapti river in the north to Kanyakumari in the south.

33. Raghu, IV.

34. A. Cunningham, *The Ancient Geography of India*, Bharatiya Publishing House, 1975, p. 430.

35. Raghu, 6.54.

36. *Markandeya Purana*, p. 305, Notes.

37. *Harsh Charita*, ch. VII.

38. *The Ancient Geography of India*, p. 435.

39. Raghu, IV-46.

40. Raghu, IV-50.

41. B.C. Law, "Rivers of India as in Ancient Literature", *Mountains and Rivers of India*, p. 210.

42. Ibid.

Kerala

The strip of land-mass lying between Gokarna in the north, Kanyakumari in the south, Western Ghats to the east and the Arabian Sea to the west is known as the Kerala country.

Murala River

This river might have been flowing in the Surala or Sirala or Murala region which in all probability coincided with the lower Tapti basin centred round Surata and Nabasari. It might be another name of the Tapti river

Trikuta Parvata

From its very name, it is evident that this mountain had three prominent peaks. According to S. M. Ali,⁴³ this hill was very high, full of precious metals and it contained numerous caves. This hill was located in the *Malasaa Dwipa* and was inhabited by *Takshasas*. Sitaram Chaturvedi⁴⁴ identifies it with the Girnar hill of Gujarat

Aparanta

This is identified with the Western territories comprising Konkan, Kanara and Bombay districts. This is one of the seven *janapadas* of the Puranic period. According to the Puranic legends, the coastal belt existing between the Western Ghats and the Arabian Sea was given as a gift to Parasurama by the ocean. It was therefore known as *Parasurama Kshetra*.

Parasya

This country lay to the west of the Indus. It is identified with modern Iran but in the past the Persian empire extended much closer to the Indian boundary.

Sindhunadi

This is the well known Indus. It is a Trans-Himalayan river. It is the greatest known river of Uttarapatha after which the Indus group is named. It was rivalled only by the Ganges. According to the *Matsya Purana*, it is one of the seven celestial rivers. Originating from the Himalayas and passing through Kashmir, Punjab and Sind, it falls into the Arabian Sea.

Kamboja

This includes that part of Afghanistan which lies nearer to Kandhar. According to *Saktisangam Tantra*,

gam Tantra,⁴⁵ it extended from the south-east of the Arab countries to Punjab. It was famous for very good horses.

The Territory of the Huns

One of the two groups of the ferocious central Asiatic tribes—the Huns—settled in the north-eastern part of Kamboja. They occupied the areas near Peshawar. Sialkot town of West Punjab was their capital for sometime. This tribe created great trouble for the Gupta kings.

Lohitya

It is identified with the Brahmaputra river. It is so called because of the red tint of its water.

Pragjyotisha

This ancient *janapada* is identified with the provinces of eastern Assam. It corresponds roughly with the Middle Brahmaputra valley. "This was a famous *janapada* on the fringe of the Eastern Country"⁴⁶ According to Kalidasa, it lay to the north of the Brahmaputra river and "therefore probably included the whole belt of alluvial land north of the Brahmaputra from the Tista eastwards"

Kamarupa

This ancient kingdom, famous for elephants is identified with western Bhutan and parts of Assam.

In other cantos of *Raghuvamsham*, the following place-names are met with:

Malyavaya Parvata

Like the Gandhamadana range, the location of the Malayayana Parvata is highly controversial. According to *Vishnu Purana*, the Meru is confined between the Nila and the Nisadha mountains on the north and south and Malyavaya and Gandhamadana on the west and east.

Pampa Lake

It existed near the Rushyamuka hill and the Pampa river. The Rushyamuka has been identified by Partiger with the range of hills stretching from Ahmednagar beyond Naladurg and Kalyani dividing the Manjira and the Bhima rivers. The river Pampa rises in this mountain and falls into the Tungabhadra

43. S.M. Ali, *The Geography of the Puranas*, p. 180

44. S.R. Chaturvedi, *Kalidasa Granthavalh.*

45. *Saktisangam Tantra*

46. S.M. Ali, *The Geography of the Puranas*, p. 151

Godavari River

It is identified with the river of the same name. It was also known as the Gautami river

Chitrakuta Hill

It is the modern Chitrakut hill lying 100 kms. W-S-W of Allahabad

Mandakini River

This river used to flow to the north of the Chitrakut hill. Nearer to that hill, the river Mohini⁴⁷ was also flowing.

Govardhana Hill

This hill which is connected with the Krishna legend is 30 kms away from Brindavana in the Mathura district of U P

Ayodhya

Situated on the banks of the river Sarayu (modern Gogra), it was the capital of Kosala. It is still there but lacks ancient grandeur and importance.

Uttara Kosala

The territory to the north of Varanasi was known as Uttara Kosala. It was the kingdom of Lord Rama and his ancestors. The river Sarayu nourished this kingdom

Nandigram

This is a small village near about 8 miles away from Ayodhya

Panchavati

This was a place in Dandakaranya.

Naimisharanya

This is modern Nimbkaru which is situated in the Sitapur district of U P. It is a sacred place for Hindus.

Tamasa

This river is identified with the Tons or Little Saryug river. This river after flowing through Azamgarh and Ballia districts falls into the Ganga

Gopratara

This is a sacred place on the banks of the Sarayu (modern Gogra).

Mithilapuri

This was the capital of King Janaka. It may be identified with modern Darbhanga district

Janasthana

This was a region near Dandakaranya where *rakshasas* used to live

Gandhamadana Hill

This hill is a part of the Rudra Himalayas and a part of the Kailasha range⁴⁸. It lies to the east of the Meru. Besides *Raghuvamsham*, Kalidasa has mentioned it in *Kumarasambhava* and *Vikramorvashtyam*. It is one of the most important hills of the Puranic age. It has also been mentioned in *Yoginitantra* (1.15), *Jataka* (VI, 519), *Harwamsam* (ch 26, 5-7), *Padma-purana* (ch.133), Banabhatta's *Kadambari* and *Dnyavadana*

Besides the above place names, the following have also found place in his works.

Gokarna

This is a sacred place for Hindus and is situated about 16 kms north of the Kunta town in North Kanara district of Karnataka

Pratisthanapura

This was situated near Allahabad and was the capital of King Pururaba. It is identified with modern Jhansi

Mahakosi

Mahakosi is a Himalayan river

Barada is a Himalayan river on the banks of which there is the image of a goddess with eighteen hands

Somahrtha is a sacred place near Pindapur in Karnataka.

Meru

B C Law identifies it with the Rudra Himalaya in Garhwal. It is probably the Mount Meru of Arrian. According to the *Bhagavata-purana*, this mountain is situated at the middle of *Ilavarta*. According to Hindu tradition, it was the rendezvous of the gods. It was visited by Vaishampayana and sage Salankayana meditated here. S M Ali⁴⁹ has identified it with the Great Pamir knot of Asia.

47. Ramayana, "Ayodhya Kanda", LIV, 39, LVI 7-8

48. B C Law, *Mountains and Rivers of India*, 1968, p 11

49 S M. Ali, *The Geography of the Puranas*, p 101.

Amaravati

This was the legendary capital of Heaven. Some thinkers have tried to identify it with the place Indralaya near Bokhara in Turkistan

Ausadhi Prastha

This was a Himalayan township. The Ganga used to flow³⁰ near it and this township was surrounded by medicinal herbs.

Krathakaushika

This was another name for Vidarbha, so named because it was divided between two princes, Kartha and Kaushika

Badarikashrama

This is a sacred place for Vaishnavite Hindus and is situated in the Himalayan region.

50 Kalika Puranania, 41 canto.

According to old scriptures this place is situated between Kanvashrama and the Nanda Parvata.

Malini

This river drained the terai region of the Himalayas. It is identified with the river of the same name which flows through the Bijnor district of U.P. The hermitage of sage Kanva was situated on the banks of the river. Besides these, mention has also been made of the Gourishikhara peak which may be identified with the Gourishankar peak of the Himalayas. Besides, he has referred to the Kanvashrama, the Sachitirtha, Agastyashrama, etc., which were the famous places of pilgrimage in ancient India.

Source. *Recent Trends and Concepts in Geography*, Volume I, Edited by R B MANDAL and V N P. SINHA, Concept Publishing Company, New Delhi, 1980, pp 33-49

**MY INDIA**

All of us, I suppose, have varying pictures of our native land and no two persons will think exactly alike. When I think of India, I think of many things; of broad fields dotted with innumerable small villages, of towns and cities I have visited, of the magic of the rainy season which pours life into the dry parched-up land and converts it suddenly into a glistening expanse of beauty and greenery, of great rivers and flowing water, of the Khyber Pass in all its bleak surroundings, of the southern tip of India; of people, individually and in the mass; and, above all, of the Himalayas, snow-capped, or some mountain valley in Kashmir in the spring, covered with new flowers, and with a brook bubbling and gurgling through it. We make and preserve the picture of our choice, and so I have chosen this mountain background rather than the more normal picture of a hot, sub-tropical country. Both pictures would be correct, for, India stretches from the tropics right up to the temperate regions, from near the equator to the cold heart of Asia.

—Jawaharlal Nehru in
THE DISCOVERY OF INDIA

The Himalayas: A GEO-POLITICAL STUDY

“Among Mountains, I am the Himalaya”
—Lord Krishna in *Bhagavad Gita*.

N. R. V. PRABHU

The magnificent range of the Himalayan mountain in the north of India has been specifically referred to in Kalidasa's *Kumarasambhava* as the king of mountains, the abode of gods and the measuring rod of the earth. It is called the dear calf of the mother cow, the earth. It is a store-house of endless gems and precious herbs; it is perpetually pure with eternal snow. It is considered the abode of the Siddhas, the Yakshas and the Sadhus. Kalidasa aptly says that female yaks spread out and wave their beautiful white tails at this Giriraja or the king of mountains and prove its title of a sovereign as if by the waving of the *chamars*. The best known sages of India have had their ashrams in the Himalayas.

The Himalayas are not a single chain of mountains but a series of several parallel ranges with an intersection of enormous valleys and spacious plateaus. The Himalayas are connected with the Hindukush, the Karakoram, the Kuen Lun, the Tien Shan, the Trans Alai ranges and the Pamirs. The Greeks called the Himalayas as the Indian Caucasus. A variety of scenery is noticeable on these great ranges. Shadowy valleys, successive forests, ridges, snowy pinnacles, deep precipices, luxuriant vegetation, magnificent glaciers, wonderful desolation at higher elevations, greatly venerated mountain peaks—all these combine to rouse the imagination and give a feeling of veneration. All the great rivers of Punjab rise in the Himalayas. The beds of the waterless forest lands are called the *Bhavah* or the *Ushara Bhumis*¹. Kalidasa, the greatest of the Sanskrit poets, refers to the Himalayas as the snow-capped Himalayan mountain ranges, which guard the northern frontiers of India, have left its indelible imprint on the history, religion, culture, art and architecture of the Indian people.

The height of the Himalayan range, the transverse nature of its valleys, and its bitterly cold winters not only contribute to the isolation of the country from the outside world, but also

complicate communication between the inhabitants of the region. It has been said in the *Puranas*, “As the dew is dried by the morning Sun, so are the sins of man by the sight of Himachal”.

The Himalayas is a system of stupendous mountain ranges, lying along the northern frontiers of India, and containing some of the highest peaks in the world. Literally, the name is equivalent to ‘the abode of snow’ (from the Sanskrit *hima*, ‘frost’ and *alaya*, ‘dwelling place’). The mountains are known as Imaus or Himaus and Hemodas, and there is reason to believe that these names were applied to the western and eastern parts respectively, the sources of the Ganges being taken as the dividing line. ‘Hemodas’ represents the Sanskrit *Himavata* (Prakrit Hemota), meaning ‘snowy’. It is now understood that the Indus should be considered the north-western limit. In the post-tertiary age, also known as the Pleistocene, approximately one million years ago, further upheavals raised the central portion of the Himalayan range, together with the foot-hills, into a vast mountain system. Physically, this mountain mass is one of the few remaining isolated and relatively inaccessible areas in the world today.

Commencing from the great peak of Nanga Parbat in Kashmir, the Himalayas stretch eastward for twenty degrees of longitude, in a curve which has been compared to the blade of a scimitar, the edge facing the plains of India.²

A brief account of our knowledge of the Himalayas may be given by shortly describing the political divisions of India which include them. On the extreme north-west, more than half of the State of Kashmir and Jammu lies in the Himalayas.³ The next section appertaining to Punjab and forming the British district of Kangra and the group of feudatories known as the Simla Hill States, is better known. East of this lies the Kumaun division of the United

2 Freshfield, D W., *Round Kanchenjunga* (1903)

3 Lawrence, Sir W., *The Valley of Kashmir* and also see Drew, *Jammu and Kashmir Territories*.

1. Dave, J H., “Immortal India”, Vol IV, pp 141-5.

Provinces, attached to which is the Tehri State. For 500 miles, the State of Nepal occupies the mountains, and is to the present-day almost a *terra incognita*, owing to the acquiescence by the British Government in the policy of exclusion adopted by its rulers. East of Bhutan, the Himalayas are inhabited by savage tribes, with whom no cultural intercourse is possible except in the shape of punitive expeditions following raids on the plains. Thus, a stretch of nearly 400 miles in the eastern portion of the range is imperfectly known. The western part of the Himalayas may be divided into three portions. The central or main axis is the highest, which, starting at Nanga Parbat on the north-west, follows the general direction of the range. Though it contains numerous lofty peaks, from the central axis, and usually from the peaks in it, spurs diverge, with a general south-easterly or south-westerly direction, but actually winding in route to a considerable extent. These spurs, which may be called the outer Himalayas, cease with some abruptness at their southern extremities, so that the general elevation is 8,000 or 9,000 feet, a few miles from the plains. Within the limits of this great mountain chain all varieties of scenery can be obtained, except the placid charm of level country. Luxuriant vegetation clothes the outer slopes, gradually giving place to more sombre forests. It is not surprising that these massive peaks are venerated by the Hindus, and are intimately connected with their religion, as giving rise to some of the most sacred rivers, as well as on account of legendary associations.⁴

The line of perpetual snow varies from 15,000 to 16,000 feet on the southern exposures. In winter, snow generally falls at elevations above 5,000 feet in the west, while, falls at 2,500 feet were twice recorded in Kumaun during the last century. Glaciers extend below the region of perpetual snow, descending to 12,000 or 13,000 feet in Kulu and Lahul, and even lower in Kumaun, while in Sikkim they are about 2,000 feet higher. Passing from east to west, the principal peaks are Nanga Parbat (26,182 feet) in Kashmir, a peak in Spiti (Kangra district) exceeding 23,000; Nanda Devi (25,661), Trisul (23,382), Panch Chulhi (22,673), and Nanda Kot (22,538) in the United Provinces; Mount Everest (29,002), Devalagiri (26,826), Gosanthan (26,305) and Kinjijunga (28,146), with several smaller peaks, in Nepal, and Dongkya (23,190), with a few rising above

20,000 in Sikkim. The most considerable stretch of level ground is the beautiful Kashmir valley about 84 miles in length and breadth varying from 20 to 25 miles (Jhelum). The valley of Nepal is an undulating plain about 20 miles from north to south, and 12 to 14 miles in width. Near the city of Srinagar is the Dal Lake, described as one of the most picturesque in the world. Though measuring only 4 miles by $2\frac{1}{2}$, its location among the mountains and the natural beauty of its banks, unite to form a scene of great attraction.

The geological features of the Himalayas can be conveniently grouped into three classes, namely: (1) the Tibetan highland zone, (2) the zone of snowy peaks and outer Himalayas, and (3) the sub-Himalayas.⁵ The Himalayas were, thus, marked out in early times, but the main folding took place in the Tertiary era. The rise of the Himalayan range may be regarded as a great buckle in the earth's crust, which raised the great central Asian plateau in late Tertiary times, folding over in the Baikal region in the north against the solid mass of Siberia, and curling over as a great wave on the south against the firmly resisting mass of the Indian Peninsula. The series of rocks which have thus been formed by the rivers, and afterwards raised to form the sub-Himalayas, are known as the Siwalik series.⁶ The granite rocks, which form the core of the snowy range and in places occur also in the lower Himalayas, are igneous rocks which may have been intruded at different periods in the history of the range.

To have an idea of the fauna of the Himalayas, it is sufficient to consider the whole system as divided into two tracts, namely the area in the lower hills where forests can flourish, and the area above the forests. Dr. Blanford suggested that the explanation was to be found in the conditions of the glacial epoch.⁷ Above the forests, the Himalayas belong to the Tibetan sub-region of the Holarctic region, and the fauna differs from that of the Indo-Malay region, 44% of the genera recorded from the Tibetan tract not being found in the Indo-Malay region. As the cold epoch passed away,

5. Holland, T.H., Geological Survey of India.

6. Atkinson, E.F., *Gazetteer of the Himalayan Districts in the North Western (United) Provinces*, 3 vols. (1882-1886).

7. Blanford, Dr. W.T., 'The Distribution of Vertebrate Animals in India, Ceylon, and Burma', *Proceedings, Royal Society*, Vol. LXVII, p. 484.

4. Freshfield, D.W., *The Geographical Journal*, Vol. XIX, p. 453.

TABLE 1-A
A Generalised chart of the Himalayan Ecology in Nepal, Sikkim and Bhutan

<i>Elevation in feet</i>	<i>Climate*</i>	<i>Economy</i>		<i>Settlements</i>	<i>Culture</i>
		<i>Agriculture</i>	<i>Pastoralism</i>		
15,000	Ice Cap EF			Snow Line	
		Oat for fodder, Potatoes	Yak, Sheep Transhumance		
12,000	Sub arctic Dwc, Dwd (in some areas, BS)	Wheat, Barley one crop per year	Yak, Sheep, Goat Transhumance	Agglomerated Gable or Flat Roof Stone Houses	Pure Tibetan descent Lamaistic Buddh- ism, Tibeto-Burma languages
9,000	Temperate Cwb	Barley and wheat in winter, buck- wheat in summer, two crops per year	Cattle, Goat, Donkey Trans- humance, Buffalo	Dispersed set- tlements (stone wall, thatched, hipped roof)	Zone of mixture (complex interplay of Tibetan kinship and Indian pen- etration)
6,000	Warm Tempe- rate Cwa	Maize, African millet, rice rece- ssive	Buffalo, Indian cattle		
3,000	Subtropical Cwa	Rice dominant	Buffalo, Indian cattle	Mainly com- pact mud walls tiled or that- ched ridge roof	Indian descent, Hinduism, Indo- Aryan languages
500					

* The letter symbols represent various climatic types. They are.

Cwa = a mild-winter, moist-summer with long hot summers

Cwb = summers are warm rather than hot

Dwc = severe-winter, moist-summer with very short, cool summers.

Dwd = winters are excessively cold.

Ef = polar climate, or ice cap, in which plant growth is impossible.

the oriental fauna re-entered the Himalayas from the east⁸.

In the Eastern Himalayas, orchids are numerically the predominant order of flowering plants; while in Kumaun about 62 species, both epiphytic and terrestrial, have been found. Contrasting the western with the eastern section we find that the former is far less rich, though it has been better explored, while there is a preponderance of European species.⁹

Mineral Wealth

Of the minerals of value, graphite has been recorded in the Kumaun division, coal occurs frequently amongst the rocks of the foot-hills and the Gondwana strata of Darjeeling district, bitumen has been found in small quantities in Kumaun; stibnite, a sulphide of antimony, occurs associated with ores of zinc and lead in well-defined lodes in Lahul. Gold is obtained in most of the rivers, and affords a small and precarious living for a few washers; copper occurs very widely disseminated and sometimes forms distinct lodes of value in the slaty series south of the snowy range, as in the Kulu, Kumaun and Darjeeling areas; slate quarrying is a flourishing industry along the southern slopes of the Dhaola Dhar in Kangra district; mica of poor quality is extracted from the pegmatites of kulu; and a few other minerals of little value, besides building stones, are obtained in various places.

The Tribes

Mongoloid tribes from Tibet, Indo-Aryan peoples from Northern India, and the Lepchas from Assam and upper Burma have settled in the Himalayan valleys and developed separate cultural patterns. The inhabitants of the Himalayas present a variety of ethnical types which can hardly be summarised briefly. Referring to two common features, from Ladakh in Kashmir to Bhutan, are found races of Indo-Chinese type, speaking dialects akin to Tibetan and professing Buddhism; but in Sikkim, Darjeeling and Bhutan they are found much nearer the plains of India. Excluding Burma, this tract of the Himalayas is the only portion of India in which Buddhism is a largely living religion. As in Tibet, it is tinged largely by the older animistic beliefs of the people.

The major religions in the Himalayas and Himalayan kingdoms¹⁰ are Hinduism and

Buddhism. The Hinduism practised in the Himalayan countries, unlike that of Northern India, is of the Tantric cults.¹¹ Buddhism is dominant in the Himalayan valleys near the Tibetan border which again can be distinguished, on the basis of ritual and belief, as two regions.¹² One of the common politico-geographic problems of the Himalayan kingdoms is the lack of strong territorial organisation resulting from the rugged nature of the terrain. Hinduism becomes an important religion in Jammu, and is predominant in the southern portions of the Himalayas within Punjab and the United Provinces. It is the religion of the ruling dynasty in Nepal, where, however, Buddhism is of almost equal strength. East of Nepal, Hindus are few. Where Hinduism prevails, the language in common use, known as Pahari, presents a strong likeness to the languages of Rajputana, thus confirming the traditions of the higher classes that their ancestors migrated from the plains of India.¹³

Food-Grains

The chief food-grains cultivated are, in the outer ranges, rice, wheat, barley, marua, turmeric, and ginger. At higher levels, potatoes have become an important crop in Kumaun; in Kulu and Kumaun European fruits have been successfully naturalized, including apples, pears, cherries and strawberries. Two crops are obtained in the lower hills; but cultivation is attended by enormous difficulties, owing to the necessity of terracing and clearing the land of stones, while irrigation is practicable only by long channels winding along the hill-sides from the nearest suitable stream. As the snowy ranges are approached, wheat and Buckwheat, grown during the summer months, are the principal crops, and only one harvest in the year can be obtained. Tea gardens were successfully established in Kumaun during the first half of the nineteenth century, but the most important gardens are now situated in Kangra and Darjeeling. In the latter district, cinchona is grown for the manufacture of quinine and cinchona febrifuge.

11 Tantric characterizes the system of doctrines and rites based on a class of religious texts known as Tantras, revelations of Siva.

12 For further details of Tibetan Buddhism, refer to Snellgrove, D., *Buddhist Himalaya*, Bruno Cassirer, Ltd., Oxford, 1957.

13. Dalton C., *Ethnology of Bengal*.

8. Ibid.

9 Freshfield, D W., n. 2.

10 See appended Table 1 and 2 for further details on the Himalayan Kingdoms.

The Forests

The most valuable forests are found in the outer Himalayas, yielding a number of timber trees, among which may be mentioned *Sal*, *Shusham* (*Delbergia Sissoo*), and *tun* (*cedrela toona*). Higher up are found the *deodar* and various kinds of pine, which are also extracted wherever means of transport can be devised. In the Eastern Himalayas wild rubber is collected by the hill tribes. Communications within the hills are naturally difficult. Cart roads have been made connecting with the plains the hill stations of Dharmasala, Simla, Chakrata, Musorie, Dalhousie, Nainital and Ranikhet. In the interior, the roads are merely bridle-paths. Sheep, and in the higher tracts, yaks and crosses between the yak and ordinary cattle are used as beasts of burden. The trade with Tibet is carried over lofty passes, the difficulties of which have not yet been ameliorated by engineers.

"India is the key to the exploitation of the Asiatic and other non-European races of the earth. She is held under bondage not merely for the sake of her own exploitation but that of her neighbours near and distant."¹⁴

This is true when we look into the political scenes of the three kingdoms. Joseph Hookes, says that "the kingdom of Sikkim comprises every phase of Himalayan sceneries in all their glorious combination, scale, and magnificence." Referring to the National Geographical Magazine, we find that "The kingdom of Bhutan is the world's last Shangri-la, now darkened by China's shadow." Again, to the words of Hamilton Fish Armstrong: "The Kingdom of Nepal is where India faces China."

"The Chinese invasion of Indian territory in October 1962, brought into sharp focus the question of the future of the three Himalayan nations. In that hostile manoeuvre, China demonstrated her apparent intention of gaining mastery over the approaches to northern India and establishing herself as the dominant political power of Asia."¹⁵ The central portion of the great mountain mass is the most rugged. Here in majestic splendour, Mount Everest, holds court with spectacular Kanchenjunga,

Makalu, Dhaulagiri, Gosamthan, and Annapurna—all, in their own right, kings among mountains. These peaks, with their snow-covered approaches, form a fantastic backdrop for the kingdoms of Bhutan, Sikkim and Nepal on the frontier area between India and China. In the three kingdoms, "where gods are mountains", each peak symbolises a God or Deity who rules over the inhabitants of the land that it overshadows. The Himalayan kingdoms could conceivably join in some kind of federation which would enhance the possibility of the establishment of a buffer "Asian Switzerland" between communism and democracy in Asia.¹⁶

"The Himalayas are important and sacred not merely for their aesthetic value but because they are the fount of life for the entire sub-continent. They are the source of life-sustaining rivers and fertile alluvium, besides being a treasure-house of herbal and medicinal plants. Looking down upon the sacred temple of Siva resting at the base of the silver-blue mountains, one could comprehend why the Himalayas had become the abode of the Gods. The preserves of Brahma, the creator, Vishnu, the preserver, and Siva, the destroyer, the mountains are the source of all life and energy and tributes to creation itself. The message of the Buddha says: "OM MANI PADME HUM" (Hail to the jewel in the lotus).¹⁷ Nature has always been an ally of humanity. Rather than to compete with it, we must ensure that development and technology work in harmony with nature."

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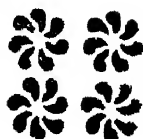
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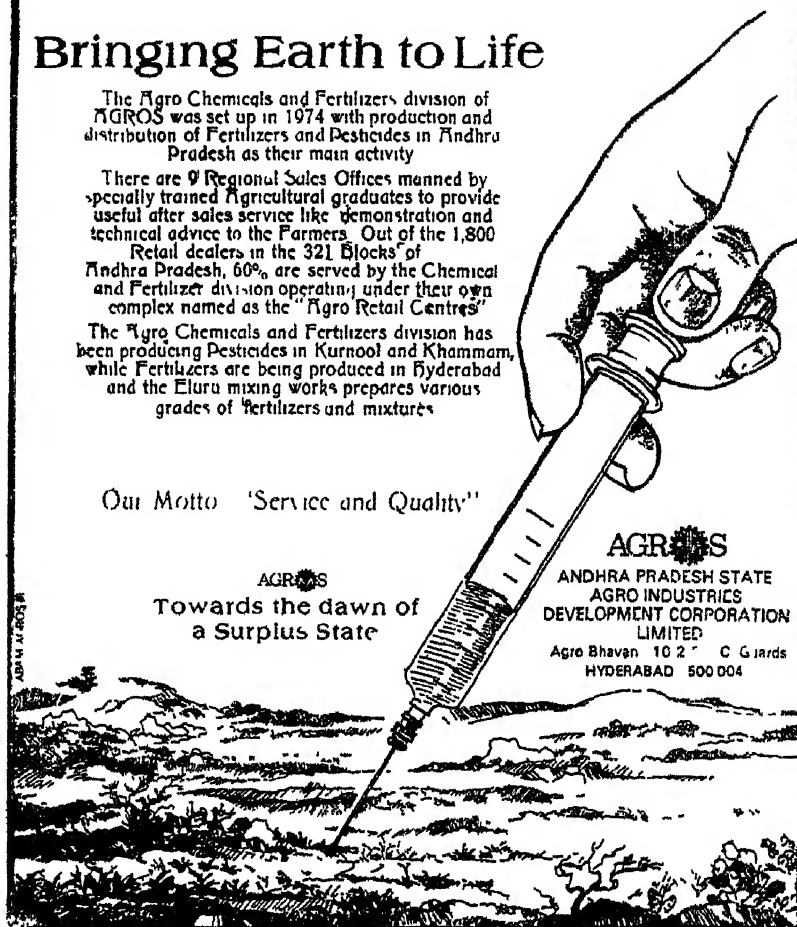
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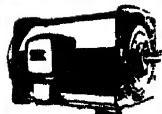
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A brief summary of a few places and their occupants is attempted below:—

Kashmir

Gulmarg, at a height of 2,730 metres, is the meadow of flowers. You see the magic of the mountains any time of the year. Beautiful lakes with house-boats gliding smoothly over the cool and limpid waters, greet the visitors. Cold-icy torrents girdle the mountain retreats. Snow bridges and shining glaciers lead you to the sacred snow-bound shrine of Amarnath. Srinagar is the gateway to this Kashmir.

Ladakh

Zoji-la, the 3,500 metres high pass connects Kashmir valley with the 'lunar landscape on earth' of Ladakh. It is a barren, wind-swept

plateau with a wild beauty of its own. Bare mountains that change colour in the changing light astonish the seeker. This is the home of the ancient lamaseries, training grounds for the Lamas.

Kulu

A narrow strip of land on either side of the upper reaches of River Beas, constitutes the Kulu valley, famous for its apples and cherries. The great Dassehra festival at the famous temple of Bijli Mahadev, attracts all the villagers of the valley. The 'Lingam' of Lord Siva gets shattered by a flash of lightning each year. What a wonder as at Amarnath where the Lingam melts away!

Simla

Entering the Rohtang pass, one steps into the Lahul valley. A rugged land of snow-covered peaks, rocky escarpments and icy glaciers, it is strange and exotic. Then comes the valley of Pangi noted for its abundant wild life. Simla, an elegant capital in the mountains, lies here with all its attractions.

Kangra

This is a town steeped in romance, lying at the foot of the Kangra valley that is as exquisite as a painting. Full of flower-strewn meadows and forest-covered hills, the valley overlooks the Banganga stream below. Ancient Rajput forts crown the hill-tops, like fairy-tale castles.

Higher up in this region lies Dharmsala, a town that is now the seat of the Dalai Lama of Tibet. One can go over to the Bhaumar Valley beyond Indrhaar pass 4,541 metres high.

Chamba

Chamba is like a picture-book town on a mountain perch high above the rushing Ravi river. Forming part of the beautiful Chamba Valley, it leads to the famous hill station, Dalhousie. People here celebrate the Minjar festival in honour of the Rain God, Varuna.

Kangra and Chamba Valleys precede the Kulu Valley.

For the Pilgrims

Onward towards the East over the mountain ranges, the visitor turns a pilgrim when he comes across in succession, the holy places known as Yamunotri, Gangotri, Kedarnath and Badrinath.

The valley of flowers (3,352 metres high) and Hemakund lake, (4,328 metres high) are

near Badrinath. It was at this lake that Guru Govind Singh is said to have meditated in his previous birth.

Here also lies the gay hill resort, Mussoorie, offering one wonderful view of Kedarnath, Neelakanta peak and Bandapoonch.

Kumaon Hill Range

The foot-hills of this range give refuge to a wide variety of wild life. Corbett National Park is that wild life sanctuary. Machans or watch towers strategically sited there, offer ring-side seats for a close view of the animals.

Herein also lies Nainital, the lake district of the Himalayas. Plainsmen flock to it for enjoying an invigorating tranquil and refreshing holiday.

Ranikhet, situated in the middle range of the Kumaon Hills is surrounded by forests of pine and oak, cedar and cypress. Miles of apple orchards greet the visitor. **A grand view of the central Himalayas is got from this resort.**

Almora is an ancient town (1,646 metres), above sea-level endowed with natural beauty. It gives one dramatic views of snow-peaks and stark mountains. Nearby is another resort, Kausani, which boasts of spectacular views, revealing a number of peaks including Chaukamba (4 pillars), Nanda Kote, Nanda Devi, and Trishul.

Darjeeling

It is considered as the jewel of the eastern Himalayas. It is also the queen of the Eastern Himalayas. It commands a glimpse of Mount Everest which was climbed by Tenzing Norgay, a native of Darjeeling. It is famous also for its Tibetan monastery (2,438 metres), the Tiger Hill (2,585 metres) and Sandakphu (3,657 metres).¹

Shillong

Just 1,524 metres above sea-level, lies this Shillong as the capital of Meghalaya. This is

situated in the Khasi region of the Himalayas. This is a land of rolling green country and wooded slopes. Here lives one of the living fossils of the animal world, the one horned Rhinoceros in the meadows of Kaziranga on the banks of Brahmaputra river. The sparkling Manas river bordering Bhutan is having a wild-life sanctuary of the same name.

Sikkim

For sheer natural beauty, Sikkim is unsurpassed. It is a wonderland of ferns and flowers, orchids and bamboos, birds and butterflies, forests of cherry and oak. Mount Kanchenjunga, a glittering citadel of ice, is the symbol and presiding deity of Sikkim. Its capital, Gangtok, is a pleasant town along a ridge (1,524 metres). Wedged in between Nepal and Bhutan and bordered by the Tibetan plateau, Sikkim is the latest addition to the Indian Union Provinces.

Kanchenjunga, 8,534 metres high, is the world's third highest mountain. The landscape is studded with Buddhist monasteries.

With this, one completes the lofty scenic beauty spots over the Himalayas. But yet, we cannot forget the other places, east of this range. They too are equally beautiful with their mountain glory.

Assam, Meghalaya, Tripura, Mizoram, Manipur, Nagaland and Arunachal Pradesh are equally the tourists' paradise. The local hill tribes with their own variegated cultures trace their origin to the days of *Mahabharata* and *Ramayana*. The dawn of Independence has changed and is still changing the pattern of civilisation in these remote north-eastern parts of our country.

Every Indian should be proud of such a beautiful Himalayan citadel and Himalayan culture.

Source *Himalayan Holidays*, (Department of Tourism, Government of India).



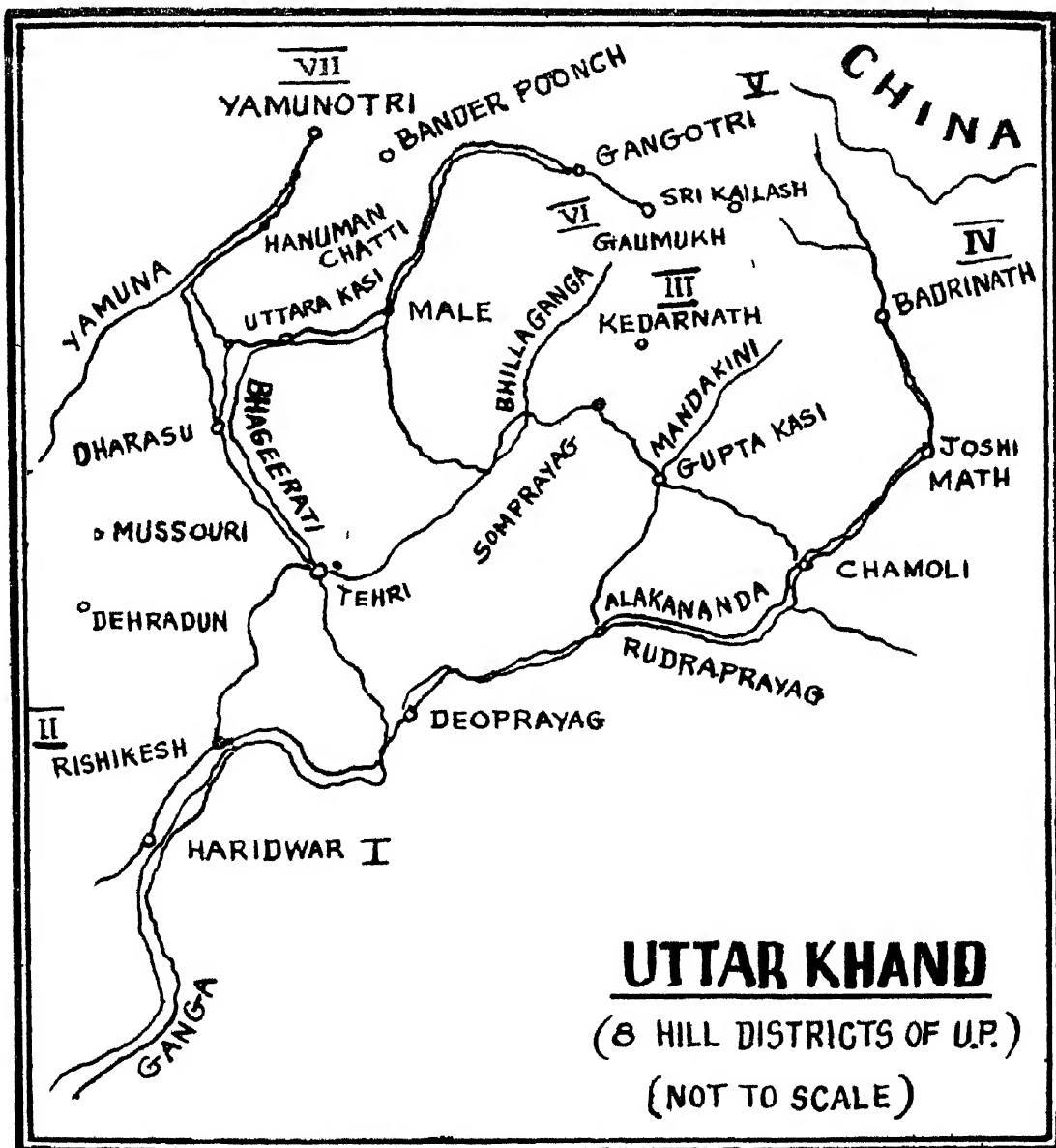
SPIRITUAL TOURISM

Since ancient times, the Himalayas have influenced our lives and culture, shaped our history and thought. Our literature and arts are Himalayan. Our myths and legends are woven round the Himalayas. Religion and Philosophy too are its inspirations

The Himalayas, intersected by enormous valleys and extensive plateaus, challenge the human spirit and evoke humility. Everyone gazes at this greatest of mountains with awe and respect, reverence and gratitude. It is no wonder that poets of fame have immortalised it in their masterpieces.

"The sky kisses its forehead, the clouds sail in its courtyard, the twilight dances on its cheeks, the silence of its evenings puts eloquence to shame". So sang poet Iqbal of India

People from the plains come to this Himalayan region to worship, to find solace and to seek redemption. The very thought of this region brings back memories of all the holy personalities of Bharath like Vyasa, Lord Rama, Lord Vishnu, Adi Sankara, sage Vasishta, King Bhagiratha etc. As such, the entire region has become the most attractive pilgrim spot for men and women of all mental make-ups



Seven is the most sacred of numbers for its symbolic values. Seven are the worlds, seven are the planes of Consciousness, seven are the sacred Rivers and Oceans and so on. A visit to this region brings one to the seven most sacred spots of Bharat. They are: Haridwar, Rishikesh, Kedarnath, Badrinath, Yamunotri, Gangotri and Gaumukh.

The mountains and rivers with which they are associated are worth studying. Nanda Devi, Changbang, Kalanka, Kamet, Chaukamba, Trisul, Dunagiri, Panch Chuli, Shivaling, Nilakanth are some of the peaks rising from 6,000 to 8,000 metres above sea-level. Lofty glaciers like Khatling, Pindari and Milam attract pilgrims very much.

A bird's eye view of the territories covering the above-said seven sacred spots is given below:-

Haridwar

Here, Mother Ganga enters the plains at the foot of the Himalayas. It is Har-Dwar for the Saivites and Hari-Dwar for the Vaishnavites. Man's mind is a dual force like the moon that waxes and wanes. Devotees stand hip deep in the sacred waters of the Ganga, ice-cold, at the bathing ghats of Haridwar. Bodily purity is a prelude to spiritual purity. And so Haridwar ensures such a purity for the devotion on their march upwards to spiritual heights.

Rishikesh

This pilgrim centre is 457 metres above sea-level and 25 kms. from Haridwar. The word 'Rishika-Isa', meaning the 'Lord dwelling in the Heart', has lent its name to this spot. This is considered as the *Tapo-bhumi* or place for penance. The heart is the vital centre of mankind, throbbing with life-force. Vital consciousness is of a higher plane than the physical. The heart is also the centre of meditation. And so it is significant to note that meditation centres of Swami Sivananda, Maharishi Mahesh Yogi as well as the Geeta Bhavan are all situated here along the banks of the river Ganga.

Kedarnath

Driving up to a further height of about 200 kms, the pilgrim reaches this spot, sacred to Lord Siva as a Jyotir Linga. Snowy peaks on one side and the flowery Mandakini valley on the other side greet the devotee now at his mental level. The mind is the lord of the senses.

He is our Devendra. In Vedic symbology, 'Indra', stands for the 'Illumined Mind.' Illumination means enlightening. The Jyotirlinga darshan will definitely give us the needed enlightenment, for, Siva is the embodiment of Knowledge, *Jnanaswaroopi*.

The beauty of the temple lies in the fact that there is no lingam of the usual type. There is only a triangular stone to represent the three-eyed Siva with his Trisul or three pointed spear. The Knower, Knowledge and the Known are termed as *Triputis* that merge themselves into the One. So, the devotee by virtue of his meditative powers will now be able to realise the One in his higher mental level.

Here, nature has provided the devotees with several lakes and tanks for blissful immersion. River Mandakini originates from here. The Pandavas ascended the heavens from this sacred spot. The levels of consciousness beyond the ordinary mental level are all illumined states of being. They are the real inward 'Swarga' for the yogins. This fits in with the legendary account of the Pandavas, the pure white souls (*Pandu-white*) ascending to those illumined spheres of Swarloka.

On the way to Kedarnath, River Bhagirathi, named after King Bhagiratha who prayed for the descent of Ganga, joins another river Alakananda to become the Ganga. This junction is effected at the place called Devaprayag, 70 kms from Rishikesh. Further up at Rudraprayag, the Alakananda River mingles with the Mandakini. And so at Devaprayag also you have a *Triveni Sangamam*. The river Mandakini joins the Vasuki Ganga at Somprayag just before 19 kms. from Kedarnath.

The pilgrim who had an easy lift in vehicles up to Somprayag, is now left to himself to trek by foot through forest valleys and stark mountains for reaching the abode of Lord Siva. It is symbolic of the truth that the ascent from vital to mental levels is not that smooth as from physical to vital. The last 7 kms. to Kedarnath out of the 19 kms. track by foot is a steep climb on naked hills. The unforgettable sight of the sunset on the mountains lends solace to the tired traveller.

Badrinath

From Kedarnath to Badrinath, it is a path of retreat and branching off to a further ascent. For the spiritual *sadhak*, it is a journey from the higher mental to the Supramental, back through the mental. At Kedar, he has the Darshan of

Lord Siva, Knowledge Incarnate But here, he is to have the darshan of Lord Narayana, the upholder of Creation and the Protector of the Created. He is face to face with the wielder of the *Sudarsana Chakra*.

Situated at a height of 3,122 kms from sea-level, Badrinath lies on the banks of the Alakananda. The main idol of Mahavishnu is carved in *Shaligram* stone. The *Sudarsana yantra* in silver adorns the sanctum

Retreating from Kedarnath, the abode of Lord Siva, the pilgrim comes to Guptakasi where the road branches off for Badrinath. The sacred place Guptakasi bears its name for the fact that Lord Siva is said to have lived incognito (*Gupta*=Secret). Proceeding eastward, the pilgrim comes to the most important halt on the way to Badrinath. Here, Adi Sankara is said to have attained enlightenment for his mission of resurgence of Hinduism. Turning northward, he reaches Badrinath to have the Darshan of Mahavishnu and His *Sudarsana Chakra*. Close by, he visits the hot springs of Tapti Kund, a nature's marvel in the snowy heights. Brahmakapala, Panchshila, the lotus lakes and Vyasa Guha are other sacred spots on the banks of the Alakananda and the Saraswati. The last point on the way to Badri is Vasudhara, a big waterfall near the Tibetan border.

The path from Kedarnath to Badrinath also passes through Chameli where the two peaks Nara and Narayana form a beautiful valley. At Badri, there are the images of Nara and Narayana, worshipped by devotees as the divinity behind Arjuna (*Nara*) and Krishna (*Narayana*) of the *Mahabharatha*.

Thus, the visit to Badrinath, leads the Sadhak to the higher Creative Consciousness (*Maharloka*) of Brahma seated on the naval lotus of Mahavishnu. Having seen Kedarnath and Badrinath high up in the Himalayas, the pilgrim has to return to the base at Rishikesh for getting ready for another climb to the remaining three spots, Yamunotri, Gangotri and Gaumukh. The climb takes him to the sources of the two sacred rivers, Yamuna and Ganga.

Yamunotri

At a distance of 222 kms. from Rishikesh the road to Yamunotri reaches a height of about 3,300 metres, above sea-level on the Himalayan peaks. Passing through Tehri, one reaches Dharasu, where the road divides itself, one leading to Yamunotri and the other to Gangotri.

The Yamuna river has its start as molten snow of the Himalayas. She is aptly called *Surya Putri*, for it is the Sun's heat that has melted the snow to give birth to the river. The crisp air and tall trees create an atmosphere of tranquillity at the sacred spot. One has to undergo an ordeal of a precipitous climb over rocks and past deep valleys in the majestic snowy ranges. This is for about 6 kms. This is preceded by another trekking for 13 kms through wooded hills and dales.

The source of the river Yamuna is the glacial peak Kalindi behind Bunderpoonch (Monkey's tail) peak. Near the temple for Yamuna Devi, are hot springs called *Suryakund* and a stone platform called *Divya Shila*.

Gangotri

Returning to Dharasu, the pilgrim takes the road to Gangotri and from there up to Gaumukh. Situated at an elevation of 3,140 metres from sea-level, Gangotri is otherwise known as Bhagirathi. The temple to Ganga stands on a stone on which Raja Bhagiratha prayed to Lord Siva (Mount Kailas) to take Ganga in his matted hairs (circular rings of peaks abounding in snow). It was here that the Pandavas atoned for their slayings in the battle of Kurukshetra. On the way, the pilgrim passes through Uttarakasi (Benares of the Hills) to have a darshan of Viswanatha. The Ganga water taken at Gangotri is carried to Rameswaram as offering to Lord Siva. Mother Ganga descends from Lord Siva's locks (snowy peaks) in seven streams, pure, life-giving and cleansing.

Gaumukh (Cow's mouth)

This is the place where the Ganga in her water form gushes out from a snout compared to the mouth of a cow (*Gaumukha*). One has to climb up 18 kms from Gangotri through some of the world's most beautiful landscape at high altitudes.

The trip to Badrinath was considered to be a yogic ascent to the Supramental Consciousness of the *Maharloka*. Beyond *Maharloka*, there are the three *lokas* of *Jñāna*, *Tāpās* and *Sātyā*. These are symbolic of the three highest levels of consciousness out of the total seven levels. They are the Consciousness of Bliss (*Ananda*), Askesis (*Chit-tapas*) and Satya (*Sat*). Gaumukh represents the outburst of Ananda (Consciousness). Gangotri represents the fruit of *Tapas*.

(of Bhagiratha) Yamunotri represents the highest Truth Consciousness of the Divine Effulgence, the *Surya Narayana*. Thus, in brief the up-hill climbs undertaken by the pilgrim to these seven sacred spots are expected to open his spiritual vision to the seven planes of his own consciousness.

We live in the land of Bharatha. The word 'Bharatha' has its true meaning as 'one who is interested' (*ratha*) in Illumination (*Bha*). Hence for us, such tours to natural spots of splendour and adventure are not merely for the sake of vital pleasures. Spiritual illumination is our goal. Hence, such tours turn out to be *Yatras* to sacred spots. **Mountains and Rivers are not mere physical entities. Behind them lurk the Divinity that has adorned them**

with grandeur and sublimity. Such a view of things is known as Adhyatmic vision, wherein the inner soul of the human being finds its presence in all things of Nature.

Climbing mountains to reach the source of rivers is equal to an act of overcoming all obstacles born of physical bodily consciousness in order to be a fit recipient of the waters of knowledge in its pristine purity stored up therein. And so Mountains and Rivers will reign supreme in the land of Bharath.

— V R K.

REFERENCE

Uttarakhand Yatra (Dept. of Tourism, Govt. of India)



CAPTIVATING HIMALAYAS

The higher valleys and mountains of Kashmir fascinated me so much that I resolved to come back again soon. I made many a plan and worked out many a tour, and one, the very thought of which filled me with delight, was a visit to Manasarovar, the wonder lake of Tibet, and snow-covered Kailas nearby. That was eighteen years ago, and I am still as far as ever from Kailas and Manasarovar. I have not even been to visit Kashmir again, much as I have longed to, and ever more and more I have got entangled in the coils of politics and public affairs. Instead of going up mountains or crossing the seas I have to satisfy my wanderlust by coming to prison. But still I plan, for that is a joy that no one can deny even in prison, and besides what else can one do in prison? And I dream of the day when I shall wander about the Himalayas and cross them to reach that lake and mountain of my desire.

From. *Jawaharlal Nehru—An Autobiography*

Evolution of the Himalayan Drainage

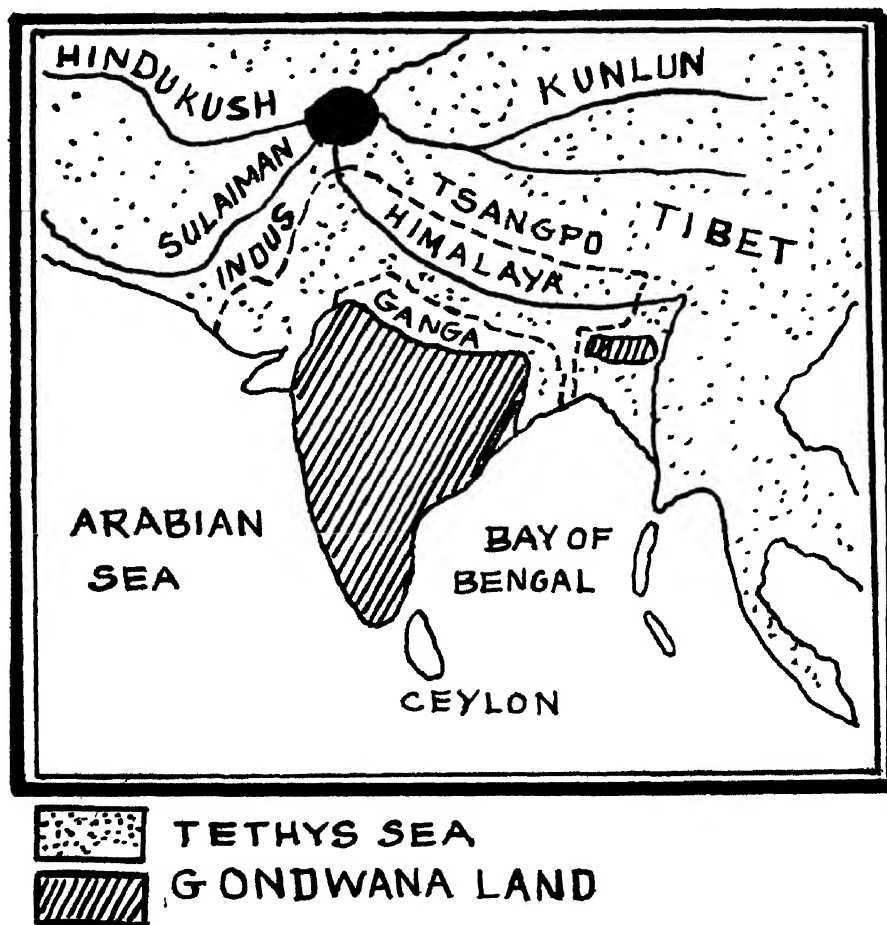
MOST OF the rivers of northern India, originated from the Himalayas as well as from those of the peninsula owing to the mountain building movement of the late Tertiary age. Thus the evolution of the Himalayan drainage is a recent development and differs a lot in features and functions from that of peninsular India.

Most of the Himalayan rivers are older than the mountains they traverse. This is because due to the slow process of mountain formation by the folding-contortion, and upheaval of the rock leads the old rivers follow much to their respective channels, although working at an accelerated rate by receiving great stimulus from the uplift of the region near their source. This momentum has been acquired by the up-

RAM BAHADUR MANDAL

heaval and this helped in eroding their channels on higher speed. Hence, the elevation of mountains and the erosion of valleys proceeded *pari passu* and these two processes keeping pace with one another up to the end and ultimately a mountain chain emerged with completely developed valley-systems intersecting at deep transverse gorges. Such linear, deep and precipitous gorges of the Himalayas cutting at right angles the line of the highest elevations, are the most characteristic features of the landscape, and are the results of the evolution of inconsequent drainage of this region. As such, the Himalayan drainage is known as an antecedent drain-

PAST AND PRESENT LANDSCAPE OF THE HIMALAYAN AREA



nage which means a system of drainage in which channels of the flow were in existence before the present features of the landscape were formed

The whole area forming the tertiary mountain chain north of India including the Tibetan plateau and the Kunlun ranges in the north formed part of an ocean known as the Tethys Sea (see Fig.) This sea existed in the Cambrian period and received deposits of that time partly contributed by rivers of the Peninsular India which had a northerly direction

The Tethys sea extended up to the present Sinkiang basin and Thianshan, etc in the north which formed a mountain chain during the Hercynian movement. The southern boundary is fixed by the peninsular land mass of the Gondwana land. The Tethys remained a sea and a basin of deposition of silt till the Upper Eocene period when the first Himalayan upheaval took place and part of the Tethyan geosyncline was uplifted. This is the sign of the beginning of the Himalayan drainage. The part of Tethys Sea was raised into a land mass with a median mass of high Tibetan plateau into the centres and two bordering ranges on either side, i.e. the Kunlun and the great Himalayas, on the southern edge of the median mass or a "Geanticline" that the system of drainage started flowing south towards the fore-deep which had started forming since the first Himalayan upheaval for which the resistance was offered by the Peninsular land mass. The formation of east-west ranges created east-west valleys, the rivers followed these valleys as indicated by the upper courses of the Indus, Sutlej and the Brahmaputra towards the southern flow. At this stage, the whole of Tethys was not so enormously raised as to be a full land surface. The patches of sea existed particularly on the marginal areas and the drainage lines were not properly developed.

The second Himalayan upheaval of the Mid-Miocene increased the altitude of the median mass and the bordering ranges. It also raised the remnant of the sea into land. A high relief and vast land surface meant greater and more invigorated drainage. But along with these general changes the bordering depression of the sea which had been fully sedimented was raised as the lesser Himalayan ranges. The major Himalayan streams, e.g., the Indus, the Sutlej and the Brahmaputra which came into existence after the first Himalayan upheaval maintained themselves across on the rising lesser ranges and they are antecedent drainage

The Sutlej, Indus, Kosi and other streams that have their courses in the interior valley of the Himalayas cut out deep gorges across the outer ranges also. As such, all those rivers are cited as noteworthy examples of antecedent drainage. As for example, the Indus valley in Gilgit, flows through a narrow defile, between enormous precipices, nearly 20,000 ft. in altitude while the dead of the valley is only 3,000 ft. above mean sea-level at Hyderabad near Indus delta. This elevation marks the successive levels of the river bed. The example of similar gorges are numerous as for example, those of the Sutlej, Gandak, Kosi Alakananda, etc which have deep defiles ranging from 6,000 ft. to 12,000 ft in depth having just 6 to 18 miles in width between the summits of the mountains.

The previous drainage lines of the older mountain belt were entirely competent to cope with the new uplift. The interior valleys of the older mountains hold vast gravel accumulations, which are eroded to form terraces. This is the supporting evidence for the antecedent origin of rivers across the southern ranges. The lesser Himalayan ranges themselves gave rise to another set of consequent drainage lines which were emptying themselves into the fore-deep which formed along the whole length of the Himalayas on either side of the south during the Mid-Miocene upheaval. Now it is difficult to say whether this drainage reached up to the Arabian Sea through a single river (Indo-Braham or Siwalik) or through the inter-connected vast lakes and lagoons into both the Bay of Bengal and the Arabian Sea are the questions which are delineated here.

With the third upheaval in the Pliocene period, the Siwalik fore-deep was folded and streams rose near the edge of the median mass across the rising Siwalik as antecedent streams. The last movement developed the final shape to the Indo-Gangetic trough or fore-deep which extended from the southern edge of the Siwalik to the northern edge of the Vindhyan Ranges and this has been jointly filled by the Himalayan streams from the north and peninsular streams from the south. The uplift of the Siwalik gave rise to the last sets of small consequent streams flowing from the courses of the Siwalik range and discharging their waters into the larger and older streams

It seems that the major portion of the Himalayan drainage is antecedent and only a part of it appears to be consequent formed at the time of that final Himalayan uplift.

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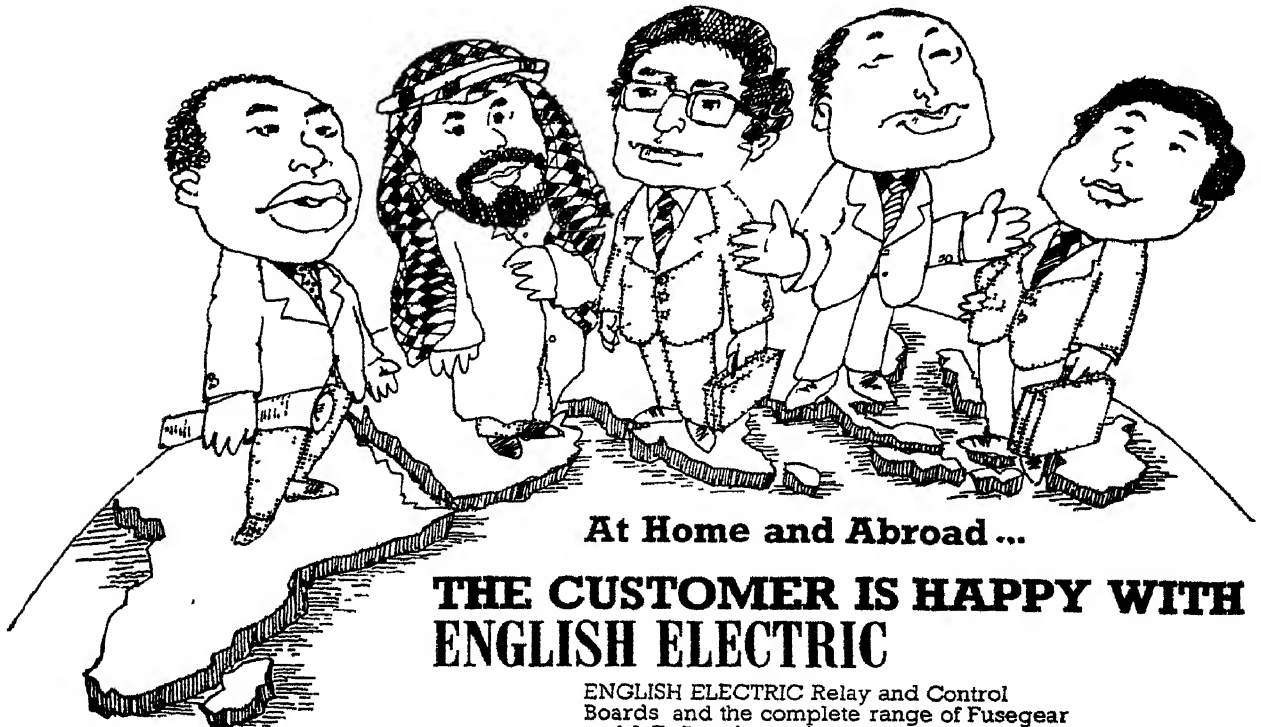
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At Home and Abroad

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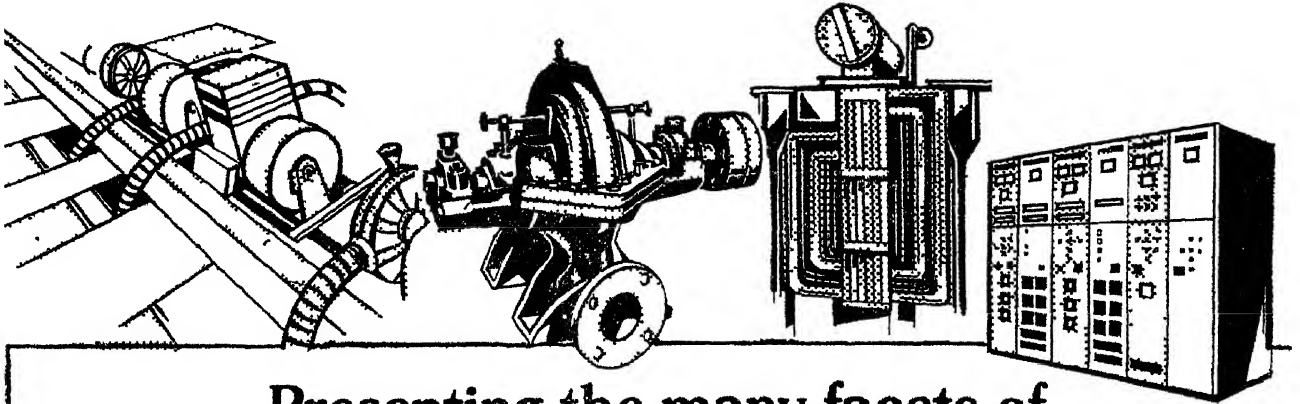


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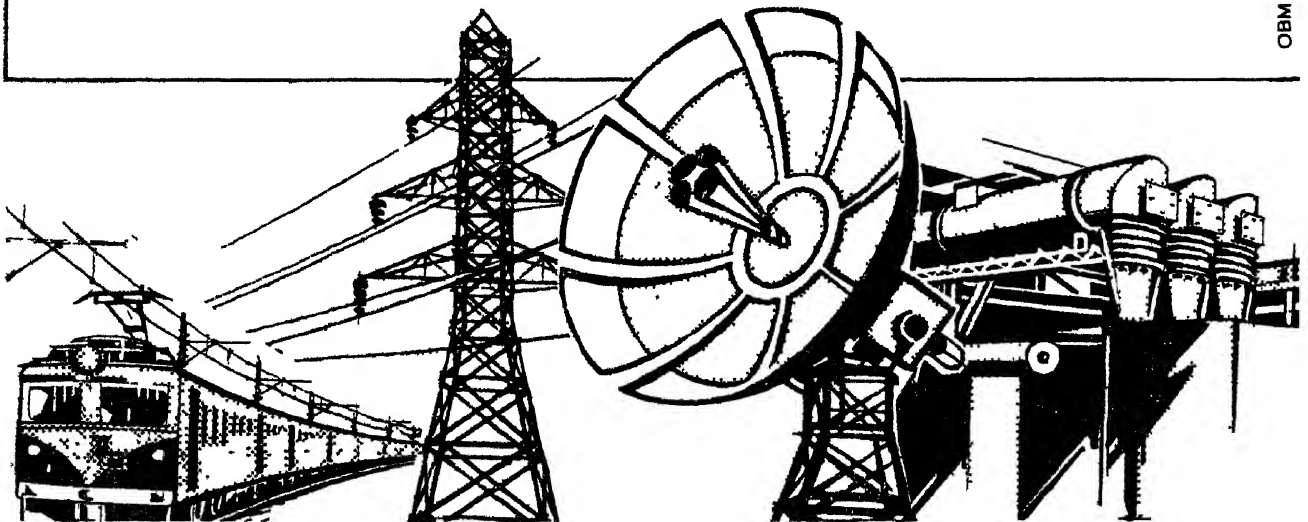
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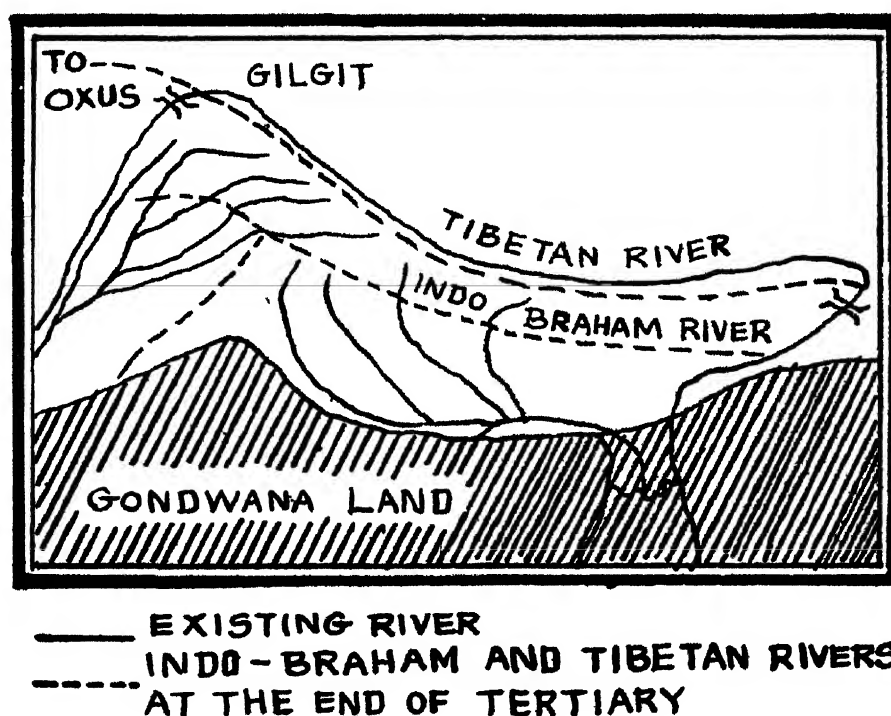


It is not clear that the drainage from the extra-peninsular mountain wall collected into the Indo-Gangetic fore-deep. It is a problem how this drainage discharged water into the sea after the emergence of the Himalayas and the fore-deep as a consequence of the second Himalayan upheaval in the Siwalik times. The older school consisting of Pascoe, Pilgrim, Oldham and Evans held that the extra-peninsular mountain drainage was discharged by a single westward flowing large river into the Arabian Sea. Fox, Krishnan and Aiyangar, however, hold that during the Siwalik times the drainage

subsidiary streams: (1) The present Indus from north-west Hazara and (2) the five Punjab tributary rivers of the Indus which are the portions of the present Jhelum, Chenab, Ravi, Beas and Sutlej which have originated after the uplift of the top-most stage of the Siwalik system and subsequent to the severance of the Indus from the Ganges

Evans and Oldham in the discussion on Pascoe's paper, pointed out that the alluvium in the Rajmahal gap, though relatively thin, is of lesser effect without structural assistance. Fur-

EVOLUTION OF THE HIMALAYAN RIVERS.



flowed both into the Arabian Sea and the Bay of Bengal.

A portion of the sea extended into the Eocene from Sind towards Afghanistan and then eastwards up to about Nainital. It was gradually filled up and replaced by the great river originating from the north-eastern corner of present Assam, which deposited a thick sediment of Murree and Siwalik rocks in between the early Miocene and the end of the Pliocene period. Post-Siwalik movements in north-west Punjab brought about a dismemberment of the river system, which hitherto has flowed from the head-waters in Assam, throughout the whole breadth of India, to the Potwar and then to the succeeding head of the Sind gulf into these sub-

ther, they pointed out that earth movement was more likely an agent of such change in temporal dimensions. An important point is the occurrence of a sharp V.S. in many of the rivers of the northern flank of the Indo-Gangetic plain which points to the north-west direction of the Siwalik alluvium boundary. The northern limbs of these V.S. are regarded by Pascoe as the remnants of the old right bank tributaries of the Indo-Brahma. The middle Indo-Brahma was being attacked from two directions, i.e., from south-west, the tributaries of the Indo-Brahma itself, from the south-east by the headstreams of the Ganges now diverted into the Bay of Bengal. The former streams may have been rejuvenated by the earth movement associated with the uplift of the Potwar plateau and similar events

taking place in the sub-Himalayas itself. The limb of the upper Chenab, upper Jhelum was cut into sections and, hence, there is no doubt that the present small one is a misfit in its broad alluviated valley, while all this was happening on the Western front. The Rajmahal Shillong watershed had been separated to form a gap and the Ganges-Brahmaputra drainage diverted into the Bay of Bengal. The rejuvenated western headstreams of Jamuna thought to have flowed in the course now marked by the dry Ghaggar depression in Rajputana in fact was the river Sarasvati of Hindu legend. The upper Sutlej has debouched into the Ghaggar bed by river capture which is activated by a tributary of the Sutlej river. The Indus confluence near Attock was a tributary of the Indo-Brahma. This tributary captured a large river flowing into the oxus in eastern Afghanistan, marking the east-west headstreams of the Indus.

This river flows into the Arabian Sea as indicated by the Siwalik deposits. Two separate rivers Proto-Ganga and Proto-Brahmaputra flowing into the Bay of Bengal cut across and captured the river. The eastern one captured the Assam portion to form the Brahmaputra which had captured the Tsangpo supposed to be then flowing westwards as suggested by its westward flowing tributary, the western one beheading the section of the Indo-Brahma or Siwalik river between the present Jamuna and Assam.

Single River Theory

The point in favour of the westward flowing Indo-Brahma by Pascoe's or Siwalik River by Pilgrim are as follows:—

1. It has been suggested that Murree gulf from Kumaon to Mekran had been filled up by sediments containing coal, gypsum and petroleum and after the migration of the sea from the land it is generally followed by a single river whose valley extends up to the Arabian Sea. This is true about the area of Punjab where deposits of such minerals are found. Moreover, with the emergence of Punjab beneath the Arabian Sea, the Indo-Brahma river extended its course according to the initial slope of the land. For this fact a lower course of the Indus is developed as the consequent stream. As for example, Burma gulf by the Irrawadi and the Mesopotamian gulf by the Tigris and Euphrates.
2. The thickness of the Siwalik deposit also proves that the material has been deposited by a single river. The Siwalik rocks have a

thickness of 16,000 ft mostly deposited by fluvial sedimentary rocks. Other rivers flowing from the north had sedimentary embankments and not crystalline rocks. Somewhere the Tertiary and the Crystalline rocks would have alternated. Moreover, in case the Siwalik was deposited by an independent river, the Siwalik regions would have numerous alluvial cones, terraces, fans and small valleys. But in this case, the deposit would have not been so enormous. In the case of the single river, it would have brought sediments from larger catchment areas. Hence, the sinking of the basin to great gaps would have been possible. The vast thickness of the Siwaliks and the nature of their boundary can be more logically explained by a single river, Indo-Brahma.

3. Most of the rivers of the Himalayan regions have their 'V' shaped upper courses. The upper limbs of 'V' are considered to be the remnants of the main courses of the Indo-Brahma River which open towards the north-west as the number of river captures are still found, with connected and detached rivers into numerous pieces, which ultimately turned into big rivers of the North Indian plain. Hence, the major rivers of the present are extended tributaries of the Indo-Brahma river. The northern limb of the 'V' shaped valley gives a very important clue to solve the mystery of the past Himalayan drainage. The meeting of a tributary with the main river along the prevailing slope towards the west is obviously the westward moving Indo-Brahma River.
4. The formation of the Rajmahal gap is a very important factor in the evolution of the Himalayan drainage. Rajmahal is a plateau made of old crystalline rocks of mainly granite, Rajmahal quartzite and slates. Volcanic action has taken place in this area during the Jurassic period and hence the lava flow is found there.

According to Pascoe and Pilgrim the gap was formed only in the Pleistocene period. Before this period, the Bay of Bengal was shut off by the extension of the Peninsular table land of Assam which separated the channels of the Indo-Brahma river. The only outlet left for the river was the Arabian Sea through which the Indo-Brahma

has to flow westward to cut a distance of about 3,000 miles. So according to Rish there was no Rajmahal gap

- 5 The constituents of the Indo-Gangetic plain are similar to that of the rocks of the Siwaliks. The deposits of the Indo-Gangetic plain have been made by the similar river system thus and so why not the Siwaliks be possibly deposited by a single river.
6. There is a similarity between the Dolphins and fishes of the Ganga and the Indus system of rivers which suggests that the two drainage lines were formerly inter-connected by the Indo-Braham river. These evidences have been presented here to prove the single river theory present throughout the length of the Himalayas

Multiple River Theory

Krishnan and Aiyangar have discarded one river theory and supported the view of the Himalayan drainage in the Siwalik times through inter-connected lagoons and lakes both into the Arabian Sea and the Bay of Bengal. The arguments forwarded are as follows.

- 1 The Siwaliks are continuous beyond the Brahmaputra up to the Bay of Bengal. Hence, if Siwaliks were formed of river deposits, it will be inferred that the river flowed both into the Bay of Bengal and the Arabian Sea.
2. Estuarine conditions were found by Fox near the source of Indo-Braham. In case the source region was an elongated sea, it would be obvious that the relief between the source region and the Arabian Sea was very little for rendering the flow of Indo-Braham from north-east Assam into the Arabian Sea
3. It has been enunciated that there was no continuous hill in the south of the Indo-Gangetic fore-deep during the Siwalik formation because Rajmahal gap has already been formed. In case this gap existed previously it is obvious that the Indo-Braham would have gone nearer the

Bay of Bengal than the distant Arabian Sea. Now the arguments about the pre-Siwalik origin of the Rajmahal gap are as follows. The second violent Himalayan movement had taken place in the Mid-Miocene period when the Rajmahal gap was formed. The topography on either side of the 'gap' is relatively mature, suggesting an older age than the post-Siwaliks.

4. Keeping in view the westward pointing 'V' shaped valley in the course of the Himalayan drainage, it has been argued that it is impossible to draw the courses of the Himalayan rivers during Siwalik times after viewing the present trends and the subsequent changes. This is because the westward 'V' shape is not the rule in most of the rivers.
5. The similarity of fauna of the Ganga and the Indus could be easily explained by assuming inter-connected lagoons and lakes
6. There is no evidence of recent uplift in Delhi-Ambala ridge According to Pascoe and Pilgrim it is a dismembering fact for the Indo-Braham river. The Ghaggar which flowed even in historic times across the divide has failed to do so as there had been an uplift in the Siwalik times.

Conclusion

In concluding the views presented by the few groups of geologists it can be said that the western geologists are in favour of a single river theory, while the Indian geologists are of the opinion that the Siwalik rocks have been deposited by the joint efforts of small and big rivers originating from the Himalayas and from the extra Peninsular drainage lines

Source: *Recent trends and concepts in Geography* Volume I, edited by R. B. MANDAL and V.N.P. SINHA. 1st published 1980, pp. 315-324. Concept Publishing Company, H-13, Bali Nagar, New Delhi-110 015



THE HIMALAYAS has a great variety of resources, but they have yet to be fully tapped. They consist of water-power resources, minerals, grasslands, forests, agriculture and horticulture. Many of these are controlled by the environment which consists of altitude, aspect, slope, ruggedness, climate and so on.

High Level Grasslands

In general, the land above 5,000 metres in the Himalayas mainly consists of rock and ice. There are some patches of grass where the aspect is favourable. Sheep, goats and cross-breeds of yaks graze in these places during summer. 'Guggul', the scented shrub, grows wild and is collected to produce incense. Another shrub called 'Kuth' is cultivated in Lahul and its roots are sent to Hongkong for

High-level sheep give very good quality of wool. The best type of wool is called 'pashmina' in Kulu and Kashmir. A great variety of woollen goods are produced from wool, obtained throughout the Himalayas. The Government is developing many sheep-breeding farms, where new varieties of sheep are being introduced.

Between 4,000 and 5,000 metres high-level grasslands are found extensively. They are called 'Margs' in Kashmir, 'Thach' in Kulu and 'Bugiyal', in Uttarakhand. They were partly covered by birch and juniper in the past near pilgrimage routes and centres. They have been cut to provide firewood. Lakshmi Ban, a birch and juniper forest near the source of the Alaknanda, Chir Bas and Bhuj Bas, which are forests of pine and birch on the way to Gaurmukh, a birch forest below the snout of the



Resources of Our Himalayas

making medicines. 'Mamiri', a kind of root is also collected in Uttarakhand. An ashy material called, 'surma', made from it for application to the eyes is sold in Badrinath. Ratan-jyot, another shrub, is collected in Yamunotri region. Perhaps, there are great varieties, of medicinal shrubs in the high Himalayas whose use is now not available to us. Researches are being carried out in this direction and more knowledge about them is being obtained. Some leading Ayurvedic firms have got interested in collecting them for medicinal purposes.

Between 4,000 and 5,000 metres where the cold is too much for trees to grow, grasslands are found. Since the grasses are very nutritious, flocks of sheep, goats, cattle and a few horses are kept in these grasslands during summer. Many semi-nomadic tribes such as the Gujars of Kashmir are engaged in this activity.

Kolahoi glacier in Kashmir, and the birch belt below Baloni in Sundardhunga are proofs that such forests can be usefully grown. Birch bark is used as a substitute for paper.

Sheep and goats are not much used for mutton and meat. Recently with the increase in tourist traffic, mountaineers and adventurous holiday-makers, the price of meat has gone up. The Gujars in Kashmir supply sheep and goats for meat at tourist centres, like Pahalgam. The military personnel now stationed near the borders are also supplied sheep and goats for meat, as at a point near Mana above Badrinath.

The dairy industry can also be developed in the high Himalayas on the lines of Switzerland. Buffalo milk in western Himalayas from the Gujars can produce good quality cheese and butter. Now, only a very poor quality cheese is

being made Ghee is also produced Much milk is consumed by the shepherds themselves. They also supply milk to the towns of Kashmir, including Srinagar The Gujars of the Bhagirathi valley migrate to the forests of Rishikesh in winter to supply milk to Hardwar and Dehradun

High Level Agriculture

This is practised by the semi-nomads of Ladakh, Lahul, Nilang, Mana, etc The most common grain grown is barley A kind of grain called 'phabra' is also grown extensively Both these grains thrive at an altitude even above 4,000 metres. Potato is grown, as also some wheat This kind of agriculture is only meant to meet local needs.

Forests

An imaginary line may be drawn in the Himalayas between the grasslands and the forests, called the tree-line, above which trees do not grow. The tree-line runs approximately at an altitude of 3,500 metres Near this line, at many places, are found rhododendrons Higher up, there are bush rhododendrons and lower down, tree rhododendrons Their only economic use is the supply of firewood, though they are well-known for their bright-coloured flowers. Scarlet rhododendrons are most commonly found in Sikkim and Uttarakhand. Near the Chhangu Lake in Sikkim and high up near Tunganath, there are violet rhododendrons They bloom in May and June, when tourists arrive Tree and bush rhododendrons occur extensively in the Sundardhunga and Sukram valleys

Tall, dark green deodars, firs and junipers and many other varieties of conifers which supply huge quantities of timber are found below the tree-line In Kashmir, they occur extensively around and above Pahalgam, around the meadow of Gulmarg and nearly everywhere else. Mixed up with them are found chestnuts and walnuts The wood of the latter is used for carving beautiful designs.

There are dense well-developed forests in Dalhousie and along the road to Chamba In the Kulu valley, there are giant deodars around Manali The Beas and Sutlej valleys provide much timber. In the latter, sky-line logging has been introduced and timber moves on hooks over wires This type of transport is increasing in popularity

In Kinnaur, a kind of conifer yields 'chilgoza', a tasty nut obtained from its fruit. On the way to the Baspa valley, there is a dense forest, where giant *Cidrus Lebani* are found One of these trees has a girth of 11 metres Dense forests in Narkanda, Jubbal, Kanasar and Kharamba provide much timber

Uttarakhand has dense forests near Jangal Chatti below Tunganath But at many places there has been deforestation Sky-line logging has been introduced in the Yamuna valley There are dense forests here as well as in the Bhagirathi valley In the upper valleys are found birches, which yield a kind of paper called 'Bhurja Patra' on which scriptures were written by saints in the olden times. There are dense birch forests above Gangotri, the Arun valley and many other places

In the Darjeeling hills, *Cryptomeria japonica* has been planted extensively and has proved a great success

Though there is some exploitation of forests in Nepal, those of Bhutan and Arunachal have still remained largely virgin They supply soft wood, which can easily be made into pulp, though this is yet to be done. At present, they provide soft wood timber and some hard wood timber

In the lower altitudes from 1,200 to 2,200 metres, the most common conifer in western Himalaya is the chir pine or *Pines roxburghii*. Mixed up with these pines, are oaks, such as *beach* or *Quercus incana* and *Q dilatata* Besides yielding timber, the pines from Kashmir to Uttarakhand yield resin from which turpentine oil is obtained The resin is collected by tapping and sent to the plains to turpentine factories and is used in the paint industry. The chir pine grows very easily, and its extent is expanding In fact, it has been said that it is expanding at the expense of oaks, which yield better timber and enrich soils more It is high time that pulp from pines is used for making paper In Meghalaya, a new kind of pine called *Pinus khasia* grows extensively. It gives timber but does not yield resin.

Potatoes

This tuber is grown very extensively throughout the Himalaya in Kashmir, Kulu, the Simla Hills, Uttarakhand, Nepal and Sikkim Besides supplying local needs, it is sent in large quantities to the plains In autumn, potato seed is

sent down for cultivation in winter in the plains. Its cultivation is gradually increasing.

The Government is doing much to improve its cultivation. Potato cultivation is rather damaging to the soils, and special care should be taken to stop loss of soil by erosion.

Fruits

Much temperate fruits are grown in the Himalaya, though their production can be easily multiplied ten-fold.

In cooler and higher areas, apples and pears are grown, while softer fruits such as apricots, peaches and plums are grown in slightly warmer areas.

Kashmir has been well-known for centuries for her orchards. A great variety of apples grow here and are sent to the plains. Apples are picked in autumn. A quantity is stored in pits filled with snow during winter for preservation. They are marketed in early summer. Apple orchards are owned by big and small land-owners. They grow around the Wular lake, where Sopor is a big collection and despatch centre. Soft Kashmiri pears which are juicy and have an excellent flavour are also grown in large quantities. But as they rot easily, their export is limited. Peaches, plums, apricots and grapes are grown in great abundance. In autumn, there is such a glut of fruit production, that a part of it, which cannot be marketed, is lost.

In the Kulu valley, apples are not yet grown universally as in Kashmir, though the Government is trying hard to introduce apples in villages. There are a number of very big orchards owned by a Britisher named Major Banon who settled here. Other members of his family have also acquired orchards, which are located in Manali, Katrain, etc. The apples are of great variety and superior quality and find a ready market all over India. Other soft fruits are also being grown here. Parsimone has been introduced and is grown in large quantities. A large orchard is located in Khajiar in Chamba.

The Simla Hills have developed fruit culture in the last two decades. Kotgarh has become a great fruit-growing centre. Orchards are spreading all over a mountain spur over hundreds of hectares. Apples, pears, peaches, apricots, plums and cherries are grown. Much fruit is sold in towns in the Simla Hills, mainly in the markets of Simla. A large surplus is des-

patched to the plains. Much is being done to improve the quality of fruit.

High up in Kinnaur in the Sutlej and Baspa valleys also fruits are grown including apricots of a specially good quality, and plums and peaches and wild and cultured grapes. 'Angoori' a kind of liquor, is prepared from grapes. Fruit culture is developing in Kinnaur and new orchards are being set up, as a result of the building of the new road with increasing prospects of export.

Namital and Almora are rapidly becoming large-scale producers of fruit. At Ramgarh, there is a great concentration of orchards, including those owned by many retired people. They often let them to contractors for management, as the chief motive is immediate profit. Various fruits are grown including apples, pears, peaches, plums, apricots and strawberries. Ramgarh orchards spread over many hectares. There is a small plant for canning fruit and making preserves and juices. One can drink bottled fruit juices at the factory stall.

Fruit gardens are developing around Bhim Tal.

At Ranikhet, the Government Chaubattia gardens produce fruits and also sell plants for spread of fruit culture in the adjoining hills. They also have a fruit-canning and juice-making plant. Apricots are grown in Jaunsar-Bawar. Fruit farms are being developed near Jubbal, where there are many peach orchards. Oranges are grown at Shama in the Sarju valley. Efforts are being made to grow pears here by grafting on wild trees. A new fruit culture station is being developed below Dhakuri at Karmi. But people in general are slow to take to fruit cultivation.

A new area is being developed near Mussoorie where orchards are being planted. The idea is to create a fruit belt in the hills of Uttar Pradesh.

Very little has so far been done to spread fruit culture in Uttarakhand. A European who settled in Harshil on the way to Gangotri planted apple orchards there. They have been maintained in this area and neighbouring villages also raise some apples. Wild apricots grow in the Bhagirathi and Yamuna valleys, a fact which shows that abundant fruit can be grown in these areas. On the route to Badrinath, a few shops sell citrus fruits grown by some lone farmers in Joshimath. At one place on the way to Kedarnath, there is a peach

garden. It is really sad to find shortage of fruits and vegetables on these routes which are visited by thousands of pilgrims

In high areas, raspberries, goose-berries and black-berries grow wild.

In Nepal, fruits are grown for local use. Oranges grow in the Pokhara valley.

Sikkim produces apples at higher elevations and very good oranges in lower altitudes. Darjeeling oranges are well-known for their sweetness and flavour. Plums grow in Kalimpong. Honey is produced in some places in the Darjeeling Hills.

In Meghalaya near Shillong, plums are grown and exported. Some attempts are being made to grow more fruits here. The lower valleys grow very good qualities of oranges. Pine-apples are well-known for their juiciness. Honey is produced in orange orchards. A large modern pineapple canning plant is being constructed in the vicinity.

There is little fruit culture in Arunachal, Nagaland and the Mizo Hills.

Needless to say that though the Himalayas is giving us much fruit of a varied nature and good quality, the output could easily be increased ten-fold and even a hundred-fold. Temperate fruits, a health-giving food can be grown in the Himalaya. It is high time that horticulture in this region is paid due attention.

Nuts

Kashmir, again, is a leading producer of nuts in India. A superior quality of almond called 'Kagzi Badam', is grown. Almond orchards are often located on Karewa deposits in the vale of Kashmir. Walnuts are raised in large quantities in the Kulu valley and the Simla Hills. 'Chilghoza' is collected from a special kind of pine in Kinnaur and also in Kashmir. There are many varieties of nuts.

There is great scope for increased production of nuts in the Himalaya and introduction of new varieties.

Vegetables

In the plains of India, cauliflowers and cabbages which grow in winter are called winter vegetables. But in the cool hills, they grow in summer and are increasingly sent to the plains during the hot weather.

Vegetables are grown in huge quantities in the vale of Kashmir, specially in the floating

gardens of the Dal Lake. All sorts of temperate vegetables are grown, as there is a ready market among Indian and foreign tourists. The vegetables are cheap and can be easily exported to the plains. However, the long road drive of more than 300 kilometres is prohibitive.

Vegetables grown around Simla are exported to Chandigarh, Delhi and other Punjab towns. They consist of cauliflowers, cabbages, turnips, carrots, tomatoes, peas, etc.

In Kumaon, cultivation of vegetables is on the increase. Besides supplying vegetables to hill resorts, much surplus is exported to the plains. Delhi is a big purchaser of the winter vegetables from Simla and Nainital. Other big towns of the plains like Lucknow and Kanpur also purchase them.

It may, however, be said that there is great scope for raising vegetables in the hills for the markets on the plains. Perhaps the production of vegetables can be increased ten-fold very easily. Their sale will bring money to the poor hill people.

Darjeeling is a great producer of vegetables. There the list is similar to that of Simla. Peas of good quality are specially important. Squash, which practically grows wild on creepers, is sold at a good price in Calcutta, which is a big consumer of Darjeeling winter vegetables. Traders have been very active in promoting the expansion of the vegetable industry. There are collecting depots in Ghoom and Darjeeling from where the vegetables are packed and despatched.

Similar to the idea of a fruit belt, there can easily be a vegetable belt between 1,200 and 2,000 metres all along the Himalaya in its western and eastern wings.

Cereals

These are not a speciality of the hills. They are grown for local consumption. There, cultivation is difficult and the environment does not favour the raising of cereals, as it does fruits, nuts and vegetables. There is little plain area in the hills and costly terracing is necessary.

Cereals are mostly grown in the middle levels between 1,000 and 2,000 metres.

The choice of the crop depends upon slope, soil type, water supply and aspect. Paddy and wheat are grown on the best type of land. Sometimes, both these crops are grown in the same field in summer and winter.

Paddy is grown in flat valley bottoms and very carefully made terraces below springs and hill-streams. In the flat exposed lake bottoms, as in the vale of Kashmir, Kathmandu, Pokhara and Manipur, paddy is a leading cereal. Paddy is more important in the eastern Himalaya.

Wheat is often grown in paddy-fields in winter in the western Himalaya. A kind of spring wheat is grown in some places at an altitude of 2,000 to 2,500 metres. Wheat is sown just before the oncoming of winter, when snow falls on the seeds and keeps them preserved during winter. In spring, the snow melts and wheat sprouts. Such a practice is seen at levels above 2,000 metres, as in the upper Pindar valley.

A very important cereal in the Himalaya is maize. Maize was the main cereal of American Indians and the U S A today is the chief producer of it. The plant was introduced into India from the U S A. The climate of the plains of India, however, has no similarity with the maize belt of the U S A which prefers a cool damp climate. This is exactly the climate to be found in the hills of India.

Next to rice, this is the second leading cereal of the vale of Kashmir. Here, it is grown in raised alluvial banks where paddy will not grow, and on eroded Karewa beds and gentle hill-slopes.

Maize is a very important crop in the Kulu valley, the Simla Hills and the Kumaon hills. It is also grown in the Darjeeling Hills and Meghalaya. Production of maize should be further increased. The orange-coloured cobs of maize left drying on slanting roofs of cottages make the scene in the Himalaya very colourful. Extensive terraces growing maize are noted near Ranikhet, Almora and Shama.

Another crop which lends colour to the landscape is Chua, which has a bright red hue. It is a kind of millet of high altitudes. It grows in Chamba, Kulu and Uttarakhand. Madua too with its yellow flowers is an important millet crop which grows in middle latitudes. Phabra, giving a deep yellow tint to the scene, grows at even higher altitudes. Barley and wheat also grow here. All these millets are grown in the upper Yamuna valley at Kharsali and in villages near it. Chua and Madua are very common in the western Himalaya.

Very little jowar or bajra is grown in the hills.

Tea

This is a special crop introduced by the British. Tea is grown extensively in Darjeeling. Here, the lands of the local people were acquired by the British at nominal prices and converted into tea-gardens. The local people had to become labourers on the tea-gardens. Tea in Darjeeling grows from 1,000 metres to 2,000 metres. At the lower limit, the quality of the tea is poor, and it is best at the highest elevations, where its flavour is best. The Happy valley tea-garden is well-known for its quality tea. The optimum development of tea-gardens is at a level of about 1,600 metres.

It may, however, be pointed out that more tea is grown in the plains of North Bengal and in the Brahmaputra valley in Assam, where it grows on raised alluvial banks and hummocky gravel mounds.

Some tea grows in Beninag in Almora district and at Palampur in Kangra. The climate and the environment in many areas of the Himalaya are very good for growing tea. But a glut in production will harm the industry and result in falling prices. However, the consumption of tea is increasing in the country, thereby leading to an expansion of tea production.

Saffron

This is a very special crop which grows only in the vale of Kashmir. It consists of the red inner petals of a purple flower which blooms in the moonlit nights of October or nearabout this time. The flowers are carefully picked and dried. The inner red petals are then removed. It is used as a colouring and flavouring condiment. The plant very much resembles an onion plant. It grows on the Karewa mounds of Pampur, hardly 15 kilometres from Srinagar. In full bloom, the undulating fields of Saffron look like a sea of purple waves for great distances. It also grows on the terrace of Kishtwar in the gorge of the Chenab. As its production is very limited and the demand very high, it is very costly. Attempts should be made to grow it on a wider scale.

Tropical Forests

Cultivation disappears and forests dominate below 1,000 metres generally. They are of a tropical nature and are very different from the temperate forests discussed earlier. However, they are sources of good quality hard wood timber. Sal, Shisham and teak are some very

important varieties. Much bamboo also grows. There is a dense undergrowth which makes exploitation difficult. Besides great quantities of timber, these forests also yield firewood.

Animal Products

Mention has already been made of sheep, goats and buffaloes kept by semi-nomadic people. The Bhots tend yaks and cross-breeds. They supply wool, meat and some dairy products. Efforts are now being made to develop them on modern lines. There are sheep-breeding farms in Himachal Pradesh and Kumaon where better quality sheep are being bred. Dairy products can easily be increased and improved in quality.

Some attempts are being made to develop fisheries. Trout fish have been developed in farms in Kashmir and Kulu and then introduced into hill streams to breed and develop. Much more can be done to develop fish in hill streams and lakes.

Feeble attempts have been made to develop production of silk. Only in Kashmir has there been an early development of silk production. Mulberry trees have been planted to feed silk cocoons. Silk production is gradually increasing. Government is now helping in the development of silk.

Fur-bearing animals are hunted in Kashmir. Gloves, caps and coats are made of fur. But this industry caters chiefly to tourists. It can be developed much more.

Musk, a highly prized scent, is procured from the belly of the musk deer, found on high altitudes. Musk is collected by hunting them in Uttarakhand. It is also collected in Sikkim. But as the musk deer is becoming rare, its shooting has been declared illegal.

Mineral Products

The structure and topography of the Hima-

laya is not conducive to the discovery and exploitation of minerals. The structure, with its overfolds and thrusts is so complex that it is extremely difficult to locate rich pockets of minerals.

Copper is known to occur in Almora and Sikkim. It was exploited in small quantities in the past. Attempts are being made by geologists in both these places to estimate the quality and quantity of the occurrence of copper-ore.

Coal is found in Riasi in Kashmir, where it is being raised for local use. Coal is also extracted near the foothills of Darjeeling near Mal and Bagrakot. They are inferior quality coals and, at best, they can be used locally. There are coal mines in the foothills near Margherita in the extreme north-east corner of the Brahmaputra valley. The occurrence of coal in the Himalaya is on the whole scrappy and of inferior quality.

Soap-stone occurs extensively in the Sarju valley in Almora district. A large-scale survey is being carried out to estimate its quantity and quality, so as to start exploitation.

Trace occurrences of some other minerals have been found, but only an intensive survey can yield appreciable results. Gold occurs in Ladakh, but not much has been done regarding it.

Salt and borax are obtained from lakes in the Trans-Himalayan areas of Ladakh and Rupshu.

A kind of black sticky substance is obtained from high rocks which is called 'Shilajeet'. It is supposed to be a very good tonic.

Source: *Geography of the Himalaya* by S.C. Bose
National Book Trust, India, New Delhi

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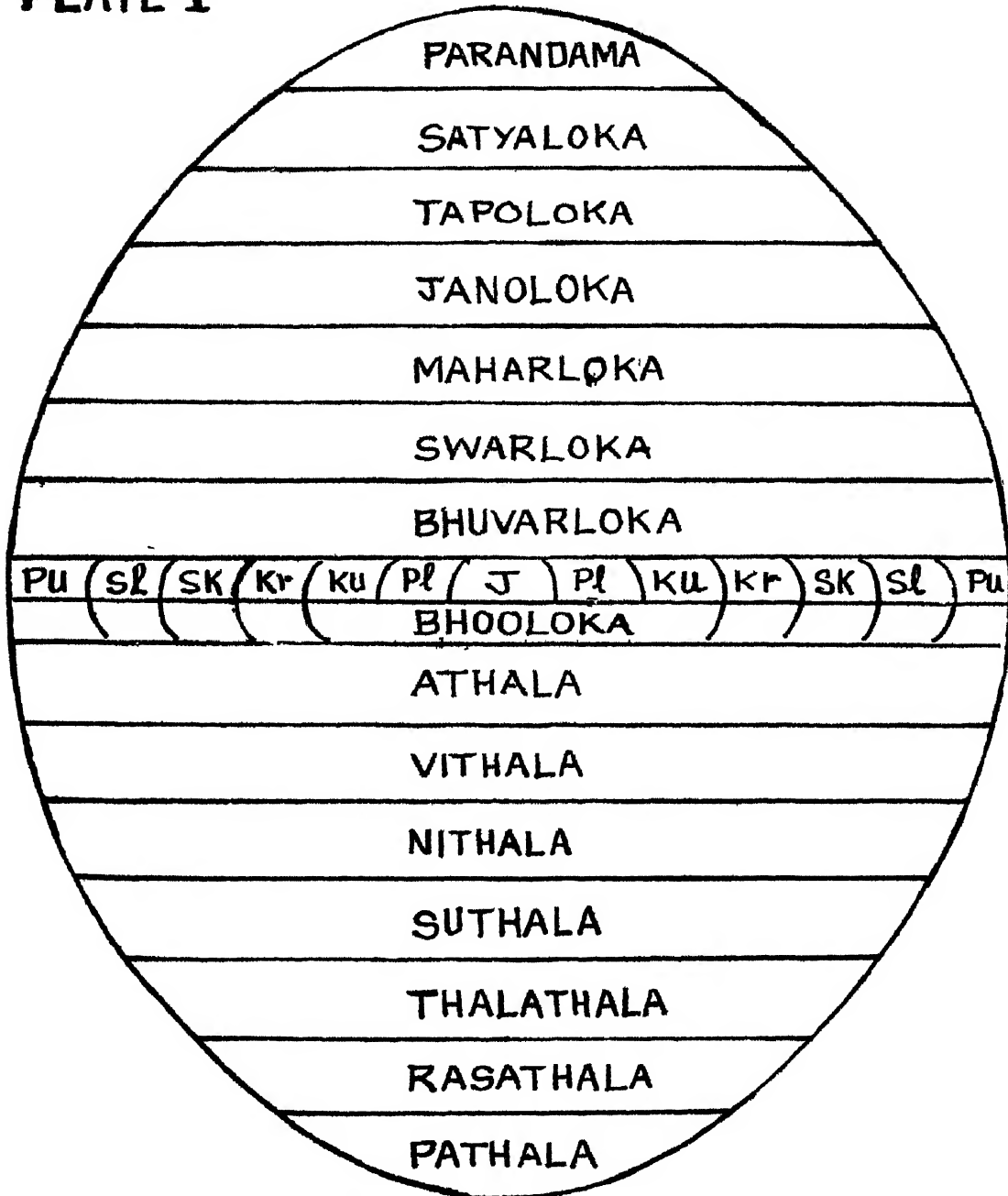


Mountains and Rivers as per Puranic Cosmology

SKANDANARAYAN

PLATE-I

THE BRAHMAANDA



THE COSMOS: ITS 14 LOKAS AND SEVEN DWEEPAS OF BHUOLOKA.

"*Saptha Dweepa Vasundhara*", is the description of our Earth as per the *Puranas* or Ancient Historical geography. It means the world con-

sists of seven Continents. Their names are *Jamboo*, *Plaksha*, *Salmala*, *Kusa*, *Krouncha*, *Saka* and *Pushkara Dweepas*.

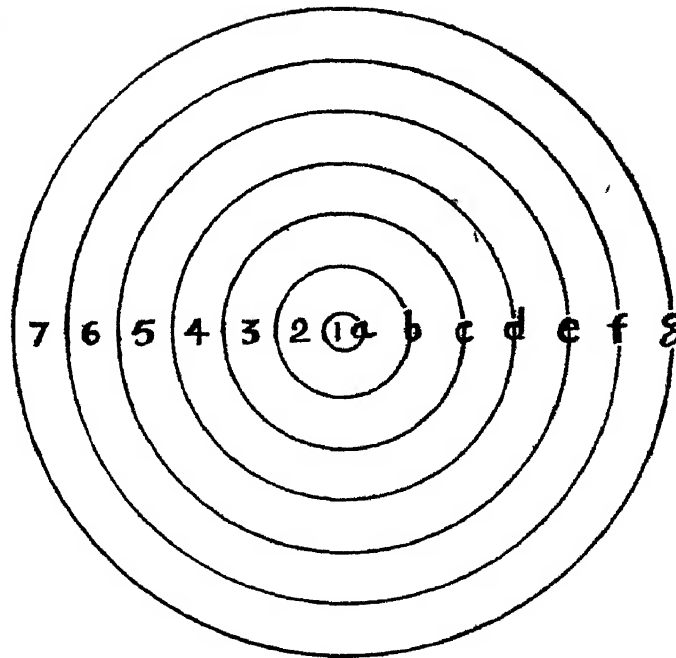
THE BHOOMANDALA

PLATE-II

PURANIC COSMOLOGY

THE DWEEPAS

1. JAMBU
2. PLAKSHA
3. KUSA
4. KROUNCHA
5. SAKA
6. SALMALI
7. PUSHKARA



THE OCEANS

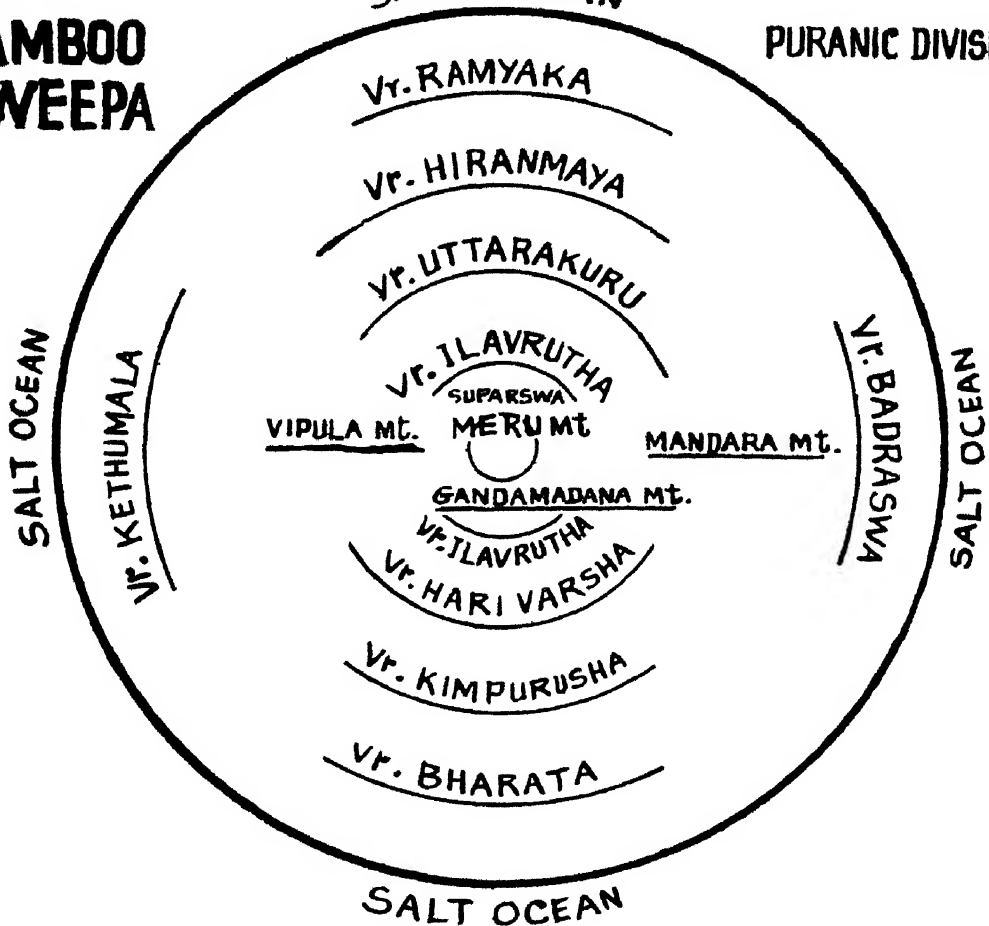
- a. LAVANA (SALT)
- b. IKSHU (CANEJUICE)
- c. SURA (WINE)
- d. SARPI (GHEE)
- e. DADHI (CURD)
- f. KSHEERA (MILK)
- g. SUDDODAKA (WATER)

PLATE III

JAMBOO DWEIPA

SALT OCEAN

PURANIC DIVISIONS



These Continents are surrounded by seven Oceans whose names are *Lavana*, *Ikshu*, *Sura*, *Sarpi*, *Dadhi*, *Kshara* and *Suddodaka*. These names are symbolic of the different qualities of the seven oceans.

In modern terminology, our Earth has the following seven Continents and their seven Seas:

Asian, European, African, Australian, Arctic, Atlantic and American Continents surrounded by:

Indian Ocean, Mediterranean Sea, Norwegian Sea, Arctic Sea, Antarctic Sea, Atlantic and Pacific Oceans.

Of these seven Dweepas, our *Bharata Khanda* of *Bharata Varsha* is in the *Jamboo Dweepa*.

The Puranic account of this *Dweepa* is very interesting and informative. In this, there are seven *Varsha Parvathas* named as *Himavan*, *Hemakoota*, *Nishada*, *Meru*, *Neela*, *Swetha* and *Sringee*.

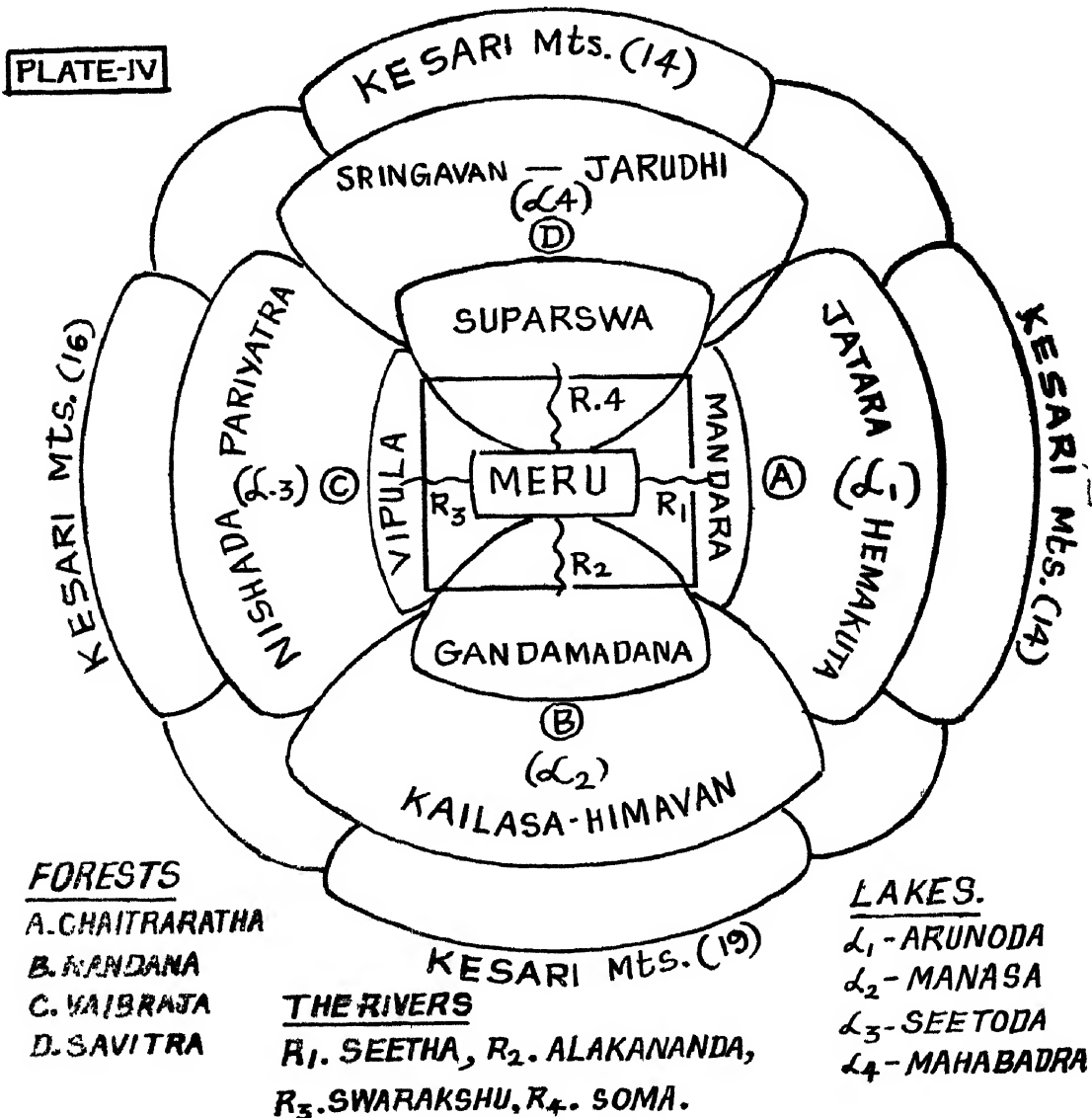
Of these, there are two *Parvathas*, centrally situated. They are *Neela* and *Nishada*. *Meru* is the most central. It is the central axis of the *Dweepa*.

Meru is situated in the territory called *Ilavrita Varsha*. East of *Meru* is *Badrasura Varsha* and west of it is *Ketamala Varsha*.

Meru Parvatha is the abode of *Brahma*. The eight directional Lords, *Dik Palakas*, are also on the *Meru*, surrounding *Brahma's* abode.

THE LOTUS-LIKE SET-UP OF MERU

PLATE-IV



The plateau on the Meru, the seat of Brahma, the Creator, is supported by four mountains, *Mandara*, *Gandamadana*, *Vipula* and *Suparsva*. Four great trees like flag-masts, adorn the tops of these four mountains. They are respectively *Kadamba*, *Jambu*, *Peepal* and *Bargad*.

To the east of Meru lies another set of *Parvathas* named *Jatara* and *Hemakuta*. Similarly on the west are *Nishada* and *Pariyatra*. On the south of Meru are *Himavan* and *Kailasa Parvathas* while on the north of Meru are *Sringavan* and *Jarudhi*.

Thus, all these mountains around Central Meru look like the lotus petals around the central stem or 'Karnika' of a lotus flower upon which is the seat of Brahma. It is a physical replica of Lord Brahma seated on the lotus, springing up from the navel of Lord Mahavishnu, the Absolute Being.

The four supporting mountains stated above have got four forests or *Vanas* named *Chaitraratha*, *Nandana*, *Vaibraja* and *Savitra*. The glory of these forests is enhanced by the presence of the four vast lakes, *Sarovaras*. They are *Arunoda*, *Manasa*, *Seetoda* and *Mahabadra*.

These forests and lakes are further surrounded by four sets of mountain ranges that constitute the *Bhooloka Swarga* or Heaven on Earth. Blessed human souls gain their abode in this Heaven. Many semi-divine beings like *Vidyadaras*, *Takshas*, *Kinnaras*, etc., reside in these spots.

The names of these Heavenly mountains are worth noting. They are as follows:

Eastern	Southern
1. Seethartha	Trikuta
2. Chakramunja	Sikaradri
3. Kubera	Kalinga
4. Sukankavan	Pathangaka
5. Manisaila	Ruchaka
6. Vrishawan	Sanuman
7. Mahaneela	Tamraka
8. Bhavachala	Visakavan
9. Suvindu	Swetodara
10. Mandara	Samoola
11. Venu	Vasudara
12. Jamasa	Ratnavan
13. Nishada	Ekasringa
14. Devasaila	Mahasaila
15. —	Rajasaila
16. —	Pipataka
17. —	Panchasaila
18. —	Kailasa
19. —	Himalaya

Upon this Meru, fell the holy waters of the Ganga sanctified by the sacred feet of Bhagavan Narayana. The heavenly river took a four-fold course after its fall over Meru. In the east, flowed the river Seetha; in the South, Alakanda, Swarakshu is the river that flows west; in the North, flowed river Soma. The Alakanda river enters *Bharata Varsha* and splits itself into seven streams before reaching the sea.

Another river of importance is the *Jamboo Nadi* formed by the juice of the jamboo fruits of the Jamboo tree of *Jamboo Dweepa*. The river bed has golden sands. Hence, gold got its name as *Jamboonada*.

The *Jamboo Dweepa* of the above description has got its territorial divisions known as 'Varshas'. These lie on the four sides of Meru. *Ilavatha Varsha* is the territory where Meru stands. To the north of this are the three Varshas: *Uttarakuru*, *Hiranmaya* and *Ramyaka*. Similarly, on the south lie the three Varshas, *Hari Varsha*, *Kimpurusha Varsha* and *Bharata Varsha*.

Bharata Varsha has again its own nine divisions called *Khandas* (bits of territory). There are seven *Kula Parvathas* and a large number of rivers having their sources in these *Parvathas*.

The nine *Khandas* are:

- | | | |
|-----------------------|------------------------|---------------------|
| 1. <i>Indradweepa</i> | 4. <i>Gabastiman</i> | 7. <i>Gandharva</i> |
| 2. <i>Kaseruman</i> | 5. <i>Nagadweepa</i> | 8. <i>Varuna</i> |
| 3. <i>Tamravarna</i> | 6. <i>Sowmyadweepa</i> | 9. <i>Bharatha</i> |

Western	Northern
Suraksha	Sankakuta
Sisiraksha	Vrishaba
Vaidoorya	Hamsanaba
Pingala	Kapilendra
Pinjara	Sanuman
Mahabadra	Neela
Surasa	Swarnasringa
Kapila	Sathasringa
Madhu	Pushpaka
Anjana	Megha
Kukkuta	Virajaksha
Krishna	Varahadri
Pandura	Mayura
Sahasrasikara	Jarudhi
Pariyatra	—
Sringavan	—
—	—
—	—
—	—

The seven Kula Parvathas are.

- | | | |
|-------------|--------------|-------------|
| 1. Mahendra | 4. Sukthiman | 7. Paryatra |
| 2. Malaya | 5. Riksha | |
| 3. Sahya | 6. Vindhya | |

The rivers flowing from the above mountains are many. Of them, the major ones are. 6 from Mahendra, 4 from Malaya, 7 from Sahya, 6 from Sukthiman, 19 from Riksha (or Skanda Parvatha), 13 from Vindhya and 15 from Paryatra.

Having seen in detail about the *Bharata Varsha* in *Jamboo Dweepa*, let us see something about the other *Dweepas*. Each of the other *Dweepas* situated around the *Jamboo Dweepa* has its own seven-fold divisions of *Varshas*,

Parvathas and *Nadis*, i.e., territories, mountains and rivers.

Thus, we find that the writers of *Puranas* have gathered all these details as handed over by generations of *Rishis* who lived prior to the *Mahabharata* period, i.e., about 5,000 years old. From the fact that what they have said about *Bharata Khanda* to be absolutely true to geographical facts, we have to take it that what has been said about all the other *Khandas* and *Varshas* and *Dweepas* as equally true to nature, subject to geographical changes that might have happened during the long period of Puranic History.

REFERENCE

Markandeya and Brahma Purana (Hindi Kalyan Edition).

Dweepas and their Varshas, Mountains and Rivers

Varshas	Mountains	Rivers
Plaksha Dweepa		
<i>Sisira</i>	<i>Gomeda</i>	<i>Anutapta</i>
<i>Sukhodaya</i>	<i>Chandra</i>	<i>Sikhee</i>
<i>Aananda</i>	<i>Naarada</i>	<i>Avipasaa</i>
<i>Siva</i>	<i>Dunduh</i>	<i>Tridivaa</i>
<i>Kshemaka</i>	<i>Somaka</i>	<i>Kramu</i>
<i>Dhruva</i>	<i>Sumana</i>	<i>Amrutaa</i>
<i>Saantamaya</i>	<i>Vaibhraajaa</i>	<i>Sukrutaa</i>
Salmali Dweepa		
<i>Sveta</i>	<i>Kumuda</i>	<i>Sronee</i>
<i>Harita</i>	<i>Unnata</i>	<i>Toyaa</i>
<i>Jeemoota</i>	<i>Balaahaka</i>	<i>Vitrishnaa</i>
<i>Rohita</i>	<i>Drona</i>	<i>Chandra</i>
<i>Vaidyuta</i>	<i>Kanka</i>	<i>Sukraa</i>
<i>Maanasa</i>	<i>Mahisha</i>	<i>Vimochanee</i>
<i>Suprabha</i>	<i>Kakudmaan</i>	<i>Nivriti</i>
Kusa Dweepa		
<i>Udbida</i>	<i>Vidruma</i>	<i>Dhootapaapaa</i>
<i>Venuman</i>	<i>Hema</i>	<i>Sivaa</i>
<i>Surata</i>	<i>Dyutimaan</i>	<i>Pavitraa</i>
<i>Lambana</i>	<i>Pushtiman</i>	<i>Sammati</i>
<i>Dhriti</i>	<i>Kusesaya</i>	<i>Vidyut</i>
<i>Prabhakara</i>	<i>Hari</i>	<i>Ambas</i>
<i>Kapila</i>	<i>Mandara</i>	<i>Mahee</i>

Krouncha Dweepa

<i>Kusala</i>	<i>Krouncha</i>	<i>Gauree</i>
<i>Mandaga</i>	<i>Vamanaka</i>	<i>Kumudavatee</i>
<i>Ushna</i>	<i>Andhakaraka</i>	<i>Sandhyaa</i>
<i>Peevara</i>	<i>Devaavrata</i>	<i>Raatri</i>
<i>Andhakaaraka</i>	<i>Dharma</i>	<i>Manojavaa</i>
<i>Mun:</i>	<i>Pundareekavan</i>	<i>Khyatee</i>
<i>Dundubh:</i>	<i>Dundubhi</i>	<i>Pundareekaa</i>

Saaka Dweepa

<i>Jalada</i>	<i>Udayagiri</i>	<i>Sukumaari</i>
<i>Kumaara</i>	<i>Jalada</i>	<i>Kumaaree</i>
<i>Sukumaara</i>	<i>Ravataka</i>	<i>Nalinee</i>
<i>Manwaka</i>	<i>Syaama</i>	<i>Renuka</i>
<i>Kusumoda</i>	<i>Ambeekeya</i>	<i>Ikshu</i>
<i>Modaaki</i>	<i>Ashtagiri</i>	<i>Dhenuka</i>
<i>Mahaadruma</i>	<i>Kesari</i>	<i>Gabasti</i>

Pushkara Dweepa

<i>Mahaveeta</i>	<i>Maanasottara</i>	<i>Ksheera Sagara</i>
<i>Dhaataki</i>	<i>Suddodaka</i>	<i>Samul</i>

Jambu Dweepa

<i>Ramyaka</i>	<i>Himavan</i>	<i>Ganga</i>
<i>Hari</i>	<i>Hemakuta</i>	<i>Yamuna</i>
<i>Kimpurusha</i>	<i>Nishada</i>	<i>Brahmaputra</i>
<i>Ilaavrita</i>	<i>Meru</i>	<i>Seeta</i>
<i>Uttarakuru</i>	<i>Neela</i>	<i>Alakanandaa</i>
<i>Hiranmaya</i>	<i>Sveta</i>	<i>Swarakshu</i>
<i>Bharata</i>	<i>Sringee</i>	<i>Soma</i>

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The French have their Seine, the Germans their Rhine, the Russians their Volga and the Americans their Mississippi, and the British have their Thames which Joseph Addison, in exaggerated pride, called the "noblest river in Europe" and to which Edmund Spenser addressed himself: "Sweet Thames, run softly, till I end my song". No country, whether it is Burma with its Irrawady, or China with its Yangtse, is behind another in celebrating in dance and song, the glory of its rivers. And yet nowhere else in the world are mountains and rivers raised to heights of divinity than in India. To Indians, the Ganga, the Yamuna or the Kaveri are more than rivers—they are givers of life. The Himalayas are more than an impressive pile of snow and rock; they are the abode of our gods. Whoever runs down our mountains and rivers, runs down the very essence of our being.

—M. V. KAMATH

Vindhya—The Bridge

Madhya Pradesh, the heart of India, embraces an area of 4,43,452 sq. kms. The major part consists of the Deccan Table Land which extends to Andhra Pradesh in the south and to Orissa in the east. The upper Ganga valley is the northern boundary while the arid tracts of Rajasthan lie to the west.

The northern part of Indian Peninsula consists of Madhya Pradesh. The river Narmada divides the plateau into two triangular portions. The northern portion has a series of plateaus consisting of the Malwa, the Sagar-Damoh and the Rewa. The Vindhya range is to the south of Malwa. To the west and the north-west of the Malwa plateau are the Aravalli hills, the oldest system of the globe.

The Vindhya range is called mountains though, in fact, they are a series of escarpments overlooking the rift valley of Narmada. It is not a smooth and level plain, but a series of broken hills and deep river valleys. It has no definite access of elevation. It runs east-west along the river and joins the Kaimur range in the west, which again is a smaller escarpment on the Sone valley. To the north-west of Malwa are the Budj Hills. The Malwa plateau is buckled on the northern fringes approaching the Ganga valley. Chambal is prominent among the ravine lands.

Except the valleys of the Narmada and the Tapti, which unlike the other rivers, flow from east to west, Madhya Pradesh consists of a plateau with a mean elevation of 500 metres above sea-level, interspersed with the ranges of Vindhya and Satpura and to the east the Chhattisgarh.

The Vindhya range bifurcates the country into two separate parts. The two parts are the

Indo-Gangetic Basin in the north and the other the Deccan Table Land in the south. This range of hills is famous since the bifurcation of Bharata Varsha led to two big highways, viz., the Uttara Path and the Dakshina Path as it links the north and south rivers.

The Vindhya range occupies a vast area of India. The range continues from the north of Narmada to the east and is linked with Bharuan and Kaimur ranges and terminates near Rajmahal. It spreads from Sasaram and Rohtas in West Bihar to Chittorgarh on the Aravallis, with the exception of the central tract of Bundelkhand. A large area of Vindhyan rocks is covered by the Deccan Trap. The outcrop has its maximum width between Agra and Neemuch.

The range of Satpura, the Mahadev Hill, the Michael mountain and the Hill of Chota Nagpur spread parallel to the south of the Vindhya. Mount Girnar or the Raivatak is situated to the west of the Vindhya. The Dandakaranya forms partly to the north and partly to the south of the Vindhya.

The length of the Vindhya range is 700 miles which forms the southern escarpment of a plateau. To the north of the Sone valley lies the Kaimur branch. Amarkant is the meeting point of the Vindhya with Satpura where the river Narmada has its source.

Ambaparni, Horoya Dasharati, Salkanpur, Mriganath and Manu Bhand are some of the important peaks of Vindhya.

Mahendra, Malaya, Salya, Suktiman, Riksha, Vindhya and Pariyatra are seven *Kulaparvatas* —(*Markandeya Purana*). The chain of *parvatas* of Orissa is Mahendra; the southern part of

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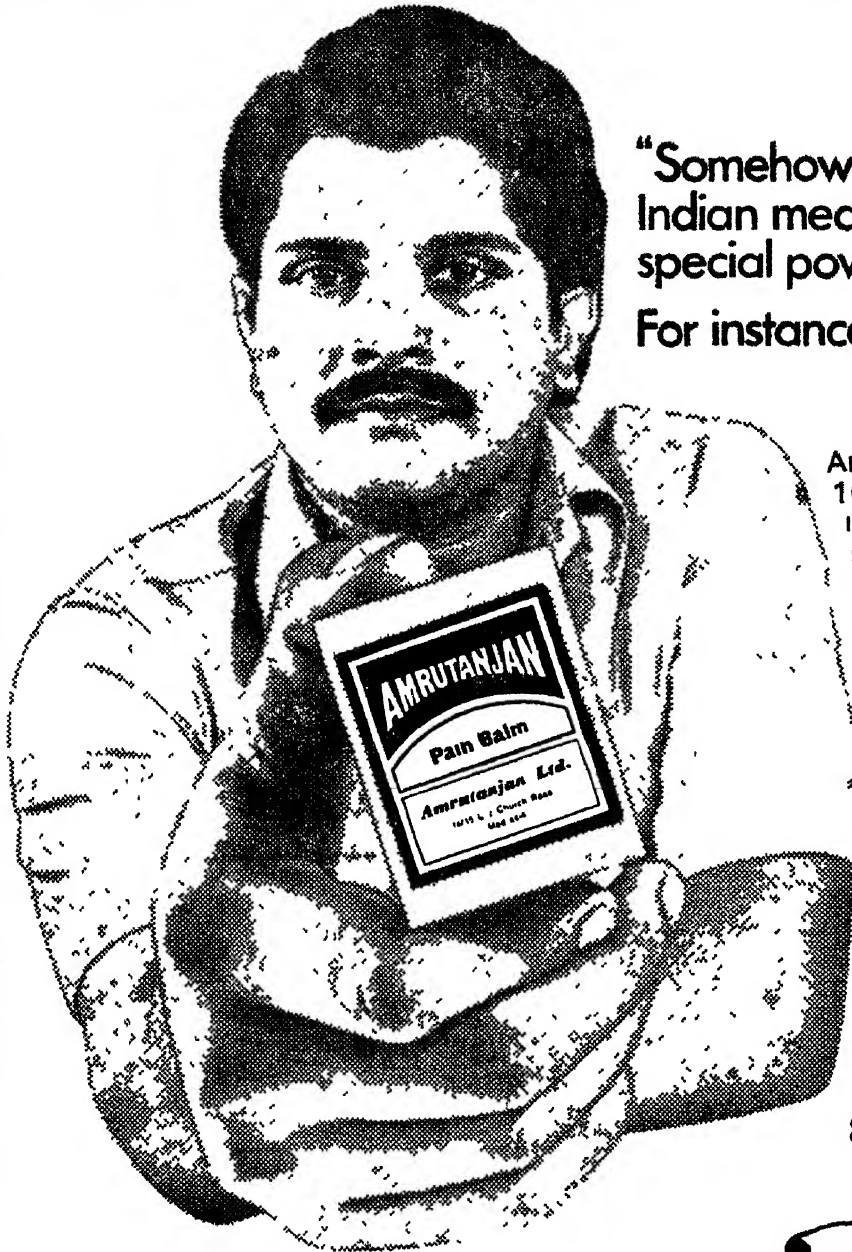


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Let's come closer

Western Ghats is Malaya, the northern part of Western Ghats is Salya; the east is covered by Suktiman; the Gondwana range is Riksa. The present eastern part of Vindhya range was known in *Puranas* as the Vindhya, which comprises the three of the seven *kula parvatas*, viz., Riksa, Vindhya and Pariyatra.

The legend of Vindhya is known to one and all. It says that Vindhya was jealous of the Himalaya and Mount Sumeru because the Sun used to revolve round them despite Vindhya's request. So it began to rise vertically so as to hinder the path of the Sun, which annoyed the gods. The Gods requested sage Agastya, the Guru of Vindhya, to check or to stop his enormous growth. Hence, Agastya approached his *sishya*, the Vindhya, which bowed down in respect to his Guru. Then the sage ordered Vindhya to stay in the same posture till he returns to the north after the completion of his mission to the south. Agastya never returned and Vindhya still lies in the prostrated position. This is known as *Vaida* (promise not intended to be fulfilled).

Another legend explains that the Vindhya range is nothing but the dropout of the mountains, which were carried by Lord Hanuman to protect the life of Sri Lakshmana.

The famous temple of Goddess Vindhya-vasani or the temple of Kaushiki Devi is in Vindhya-chal station about four miles away from Mirzapur. This is famous for the festival of Navaratra. *Devi Bhagavata* mentions this place as one of the 108 sakti-pithas. The temple of Thal of Mahakali or Kalikhoha is also situated in Vindhya-chal. The temple of Astabhuj is about eight miles away from this temple. Goddess Vindhya-vasani, Mahakali and Astabhuj are said to be the Goddesses Mahalakshmi, Mahakali and Mahasaraswathi.

Vindhya range is composed of a vast stratified formation of sandstone and limestone. The sandstones are in pinkish colour and lie in

horizontal slabs. Vindhya are contemporaries of the TORRIDON sandstone of Scotland. The whole range is elevated from 1,500 to 2,000 feet and a very few peaks are above 3,000 feet.

Vindhya is divided into lower and upper divisions. The lower Vindhya shows tectonic deformation with folding movements, while the upper generally lies in the undistributed horizontal strata. The upper consists of two diamond bearing horizons, viz., between Kaimur and Rewah series and the Rewah and Bhandar series. The historically famous Panna diamonds are mined from these beds.

Vindhya and Satpura form the backbone of middle India. The sandstone has been utilised for several centuries as building materials. The Buddhist stupas at Sanchi and Bharhut, Kajuraho temples, palaces and forts of Gwalior were constructed with the Vindhya stones. The limestone of Nagod is famous, for limestone and for diamond Panna. The Vindhya also has the iron, manganese and raw material for asbestos as mineral deposits.

The large portions of Satpura in the east and in the west are embedded with basalts. The centre part is composed with the capping of the traps and granitoid and metamorphic rocks, covered by mesozoic sandstones.

The Vindhya mountains are not only famous or popular on the basis of puranic legends and geographical coverage but also based on its historical monuments. The forts that have historicity are also situated on this range, viz., Gwalior, Narnada, Chanderi, Mandu, etc.

Thus Vindhya are the most celebrated mountain ranges from ancient to the modern times. This is not only based on the historicity, legends from *Puranas*, mineral deposits and historical monuments but also based on culture and religion, which are the shrines of spirituality.



~~~~~ ADVENTURE CALLING ~~~~~



The curiosity to move yonder and see what lies beyond has been the inspiration behind all explorations, discoveries and adventures. If that yearning to explore the unknown lures brightly within you, then you are young—no matter what your age. As they say, one is as old as he feels. You could be young in years and yet old in spirits if burdened under a heavy load of cares and worries of your vocation. Or, you could wear your years lightly if you have immersed yourself in enjoying the joys of nature.

It is only the spirit of adventure and enquiry which has broadened the horizon of adventure and opened new vistas in exploration, discovery and even science and technology. A craving for change, for stimulation, for adventure, is in-built in our system. It is the real thing, the real joy and satisfaction which you derive when you are amidst nature. It is said that the compulsions and compunctions of modern fast life have pushed this natural instinct to the farthest depths. Do not allow yourself to get rusted in the chores of crowded life. Take a holiday from your cares and worries—get away from it all to the caring fold of mother nature. It has

everything to invigorate, to rejuvenate you and your spirits.

According to Sir Edmund Hillary, people lament, what is there left for adventure for them, the highest mountain has been climbed, man has sailed around the world, has landed on the moon. Hillary says that there is no reason to despair—you have just to look around and you would find the opportunities for adventure. That is how the idea of the jet-boat expedition up the River Ganga, "From the Ocean to the Sky", was conceived. Naomi Uemura, the Japanese adventurer, found going along to the North Pole, both challenging and thrilling. We can give plenty of examples which should inspire one and all.

Adventure is not new to India. In fact, we are the pioneers in this field. All our pilgrimage centres are located in places far-flung and difficult of access. It took one year to complete a pilgrimage which was religiously incumbent on one and all. He returned a better, well-informed, understanding man, better suited to meet the challenges of life. If ancient India

COMMANDER JOGINDAR SINGH

had made phenomenal advance in science, literature and all-round prosperity, it was mainly and primarily due to this spirit of adventure

The Lure of the Himalayas

From the Pamir, 'the roof of the world', to the borders of China, Tibet and Burma, the Himalayas extend as an unbroken wall of snow-clad ranges, pierced by passes only a few of which are less than 5,000 metres in height

Literally meaning, the "Abode of Snow", it has dominated Indian mind and philosophy. The Himalayas and Holiness are inseparable to the people of this ancient sub-continent. There is, in the Himalayas, a strange sense of spiritual joy and peace

The rivers that flow from them to the plains below, are the holiest—The Sindu or the Indus from which the very names of India and Hindu are derived—the Ganga, the holiest of rivers on the surface of this earth. The Yamuna, Saraswati and Brahmaputra—all have their origin, in the Himalayas

The central plateau created by the Himalayas, is the source of life for nearly half the human race

The gigantic natural rampart has not only acted as a protective shield but it has also afforded

sanctuary to the cultures, religion, customs and arts which have elsewhere been wiped out, forgotten or devoured by other more assertive or oppressive beliefs. It has been the inspiration behind the great epics. In the grove of Badrikasrama, lived the famous sage, Vyas, who wrote the *Mahabharata*. At Rishikesh, by the bank of the Ganges, the sacred *Vedas*, were given their final four-fold form. Vasishta, sage and seer, the recluse writer of an immense *Yoga Compendium*, practised his yoga in the little tree shadowed valley there. Lord Buddha himself was born in the foot-hills of the Himalayas and his gospel of love and non-violence cut through all barriers of caste, creed and the narrow confines of parochialism. They transcended even the Himalayas and soaked spiritually the lands around, like the rivers that descended from the lofty mountains

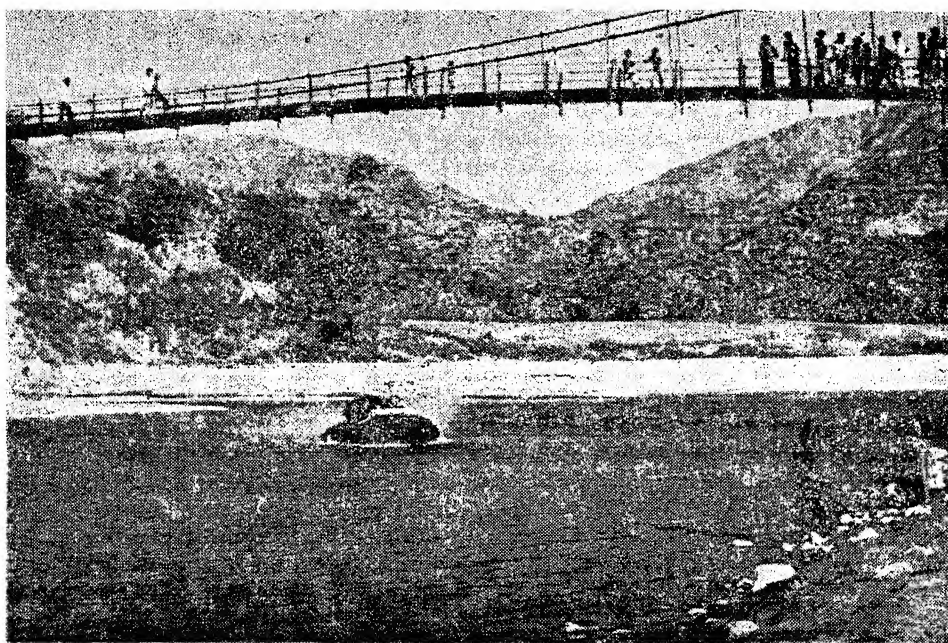
Mountaineering

Mountaineering affords tremendous opportunities for adventure. It is a subject in itself and cannot be covered here. Without dwelling over it, we will pass to other adventure activities available primarily in the mountainous terrain

Skiing

The Himalayas offer a feast to skiers. Quite a few teams have successfully skied down the summits of Trisul Nun, etc





The Indian Institute of Skiing and Mountaineering, Gulmarg, in Kashmir, situated 2,730 metres high, offers fine ski slopes with 35 degree gradients, run up to 2 kms and a 10 kms. run for the more adventurous. Beginners are well looked after. There are excellent nursery slopes and qualified ski instructors to impart training in both skiing and ice-skating. Snow conditions are good from December through to early March.

The Institute of Mountaineering and Allied Sports, Manali, organises regular skiing training courses.

Trekking

The Himalayas are a tourist's paradise. They offer a rich and rewarding holiday. Here, you can breathe deep, the resinous pine forests and forget the din and dash, stress and strain of modern life.

The Youth Hostels Association of India organises trekking programmes in the Himalayas, in the Western Ghats, in Coorg, in Karnataka, in the Gir forests of Gujarat and along the sandy coast beaches of Goa.

The Climbers and Explorers Club, organises Rock climbing camps in the Aravalli hills near Delhi, camping and trekking excursions to wild-life sanctuaries, Jim Corbett Park, Valley

of Flowers. The Ministry of Education extends all help, support and grants under its adventure schemes. The Indian Mountaineering Foundation gives all help, support and encouragement and even financial subsidy to all organised adventure activities. There are now scores of similar associations and clubs in the country who organise climbing, trekking and other adventure activities for their members. These activities are, therefore, available just for the asking. The only thing required is the will to experience new thrills and joys.

When you are engaged in a sport of an adventurous type, your full and complete attention is focussed on what you are presently doing. If you are shooting a rabbit, your faculties are attuned how to negotiate it. If you are climbing a mountain, all your mind is alive to finding and looking for footholds and handholds which could take you up; if you are trekking, you are all concerned about reaching your destination. In short, such an activity affords you a complete and total break with your immediate past. It takes you away from all your cares and worries and when you return, you come back a new person, refreshed, relaxed, ready to face the challenges and stresses and strains of modern life anew.

★★★

Mountains, of course, are really glorious, but, small mounts too gain their glory by association with local History. History and Geography mix together to perpetuate their name and fame. Madras State has some such mounts and hillocks of note. All these are on the railway track.

1. St. Thomas Mount

27.1759, saw the fiercest battle between the French and the British. It is called the battle of the Mount.

Just 200 feet above sea-level, this mount is composed of green stone and syenite. The summit of the mount is adorned by an old Roman Catholic Church called the "Expectation of the Blessed Virgin".

It is also said to be the traditionary scene of St. Thomas' martyrdom. The saint took refuge in a cave wherein a miraculous spring of water

once surrounded by a rectangular fort, now in ruins excepting the main guard gate and portions of walls on the boulevard road.

The rock now houses the sacred temple of Mathrubhoteswara at the middle elevation. The top of the mount is occupied by a Vinayakar temple, providing a panoramic view of the Trichy town and suburbs.

The mount has seen the battling forces of Malik Kafur in A.D. 1310, Mahrattas in A.D. 1740 as well as those of the French and English, later, in that century itself.

4. The Dindigul Rock:

A huge rock, without any vegetation, wedge-shaped, 400 feet long and 300 feet broad, rises to a height of 1,223 feet above sea-level. Upon this, is a fort of historic notoriety. Mahrattas, Mysore troops, Chanda Sahib and Hyder Ali—all had their eyes on this fort owned by the

MOUNTAINS AND HILLOCKS OF TAMILNADU

arose and protected the saint from thirst. The Mount is 8 miles from Madras.

2. Gingee (Senji Kottai):

Three strongly fortified hills rising from four hundred to six hundred feet above the plains constitute this Gingee Mount, 18 miles from Tindivanam in South Arcot District.

It has an impregnable fort built by Vijayanagar Kings. Its highest peak, Rajagiri, houses this stronghold and is connected with the other two peaks, Krishnagiri and Chandrayan Durgam.

The 17th and 18th centuries saw fierce fighting for this fortress area between the Vijayanagar Kings, the Muhammedans, the French and the British.

3. The Rock Fort, Trichinopoly:

Rising abruptly out of the plains to a height of 273 feet above sea-level, this huge rock was

Poligar of Dindigul and Tirumalai Nayak of Madurai. Between 1600 A.D. and 1800 A.D. there were ceaseless fightings for sovereignty over this barren rock fort. Hyder Ali and Tippu Sultan also tried their hands in this assault. Finally, it passed on to the East India Company of the British in 1792. Srirumalai Hills, 4,000 feet high, simply stood as a silent witness to these onslaughts by these land grabbers from afar.

5. Kodaikkanal Hills:

Forming part of Palani Hills, Kodaikkanal, at a height of 7,000 feet above sea-level, is still a favourite hill-station for. It is also a sanatorium as its climate is considered best. It is 320 miles from Madras.

6. Kurumalai and Kalugumalai:

Koilkattur in Tinnevely district is the place for visiting these two small hill ranges nearby. Of these, Kurumalai was the sporting ground.

for Ettayapuram Raja who was fond of hunting deer and hares. Kalugumalai is noted for its rock-cut Jain temples from where the voice of non-violence rose in vain.

7. Tirupparankundram:

This is very near Madurai. It is a sacred spot for devotees of Lord Muruga, for whom there is a rock-cut temple. Legendary fame is attached to the cavern in this rock. This too is mostly a barren rock at present, having lost all its natural beauty of its surroundings as sung in *Tirumurugaatruppada*.

8. Coutrallam Falls:

Very near Tenkasi, the river Chittar, flowing through a mountain-girt valley, has its beautiful and imposing waterfalls. The bathing pool at the falls is under a shelving rock. Pilgrims and tourists enjoy a natural shower bath here.

9. Tiruvannamalai:

The vertical peak 2668 feet high, on the Eastern Ghats is considered by the Saivites as a sacred Siva Linga itself. Once, its three peaks were fortified for military purposes. It was besieged on ten occasions and retaken six times between 1753 and 1791 during the First Mysore War. Lord Siva is stated to have appeared to Parvathi in the form of a flame of fire sprouting from the top of this hill. Even today, this event is commemorated by lighting a large torch in a huge bowl containing camphor and ghee. Its blaze is said to last for 48 hours during the Kartigai Festival.

10. Javadi Hills (Javvadu Malai):

Polur in North Arcot District is wholly mountainous. Javadi Hills, 2,800 feet high range, is also blessed with the sacred river Cheyyar or

“Baahuda Nadi” (Hand-giving river). The area once belonged to the Raja of Venkatagiri during 1796. The river has also its puranic name ‘Skanda Nadi’. Nearby, we have the caves of the Jains at Tirumalai.

11. Yercaud Hills (Shervaroyan Malai):

Very near Salem is this hot-weather resort at a height of 4,300 feet above sea-level. Beautiful scenery and a delightful climate have made the spot attractive. The Shervaroyan is the top-most peak of these hills. For pleasure hunters it is a picnic spot.

12. Sankari Durg:

A Square mass of gneiss rising over 2,000 feet above the plains, is this hills near Tiruchengode, Salem District. Tippu's fortifications are on its top.

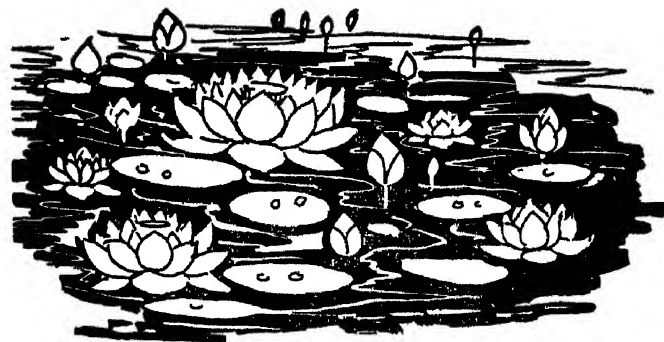
13. Coonoor (Nilgiris Range):

5,600 feet above sea-level, Coonoor on the Nilgiris is just a hot weather resort. Streams and waterfalls criss-cross the ghat road leading to Coonoor. The location of the town on the side of Jalkattalla Valley at the mouth of a great gorge surrounded by wooded hills, enhances its scenic beauty. The rocky bluff known as ‘Lady Canning's Seat’ and the Durg, the summit of a bold hill towering high, are two worthy spots for sight-seers.

14. Kotagiri, Aravantadu, Ooty:

These are high spots of the Nilgiri Hills. Pandyan Kings held possession of these hills. Ketti Valley offers a splendid view nearby. The famous hill-resort, Ooty, is also nearby. It is at a height of 7,000 feet. Dodabetta is still higher (8,700 ft.). The Pykara waterfalls serves humanity with its current.

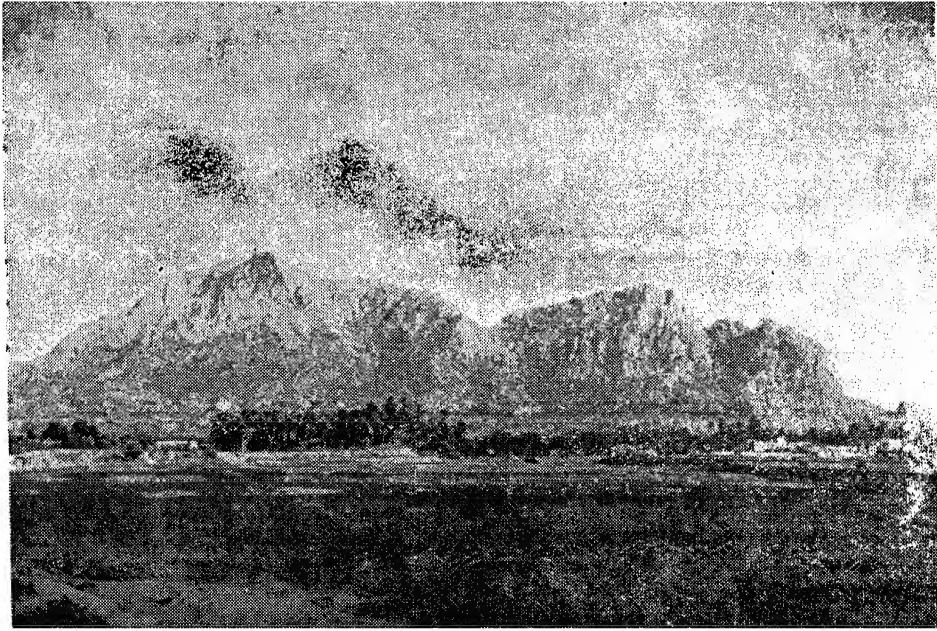
Compiled by ‘KULANDAI’



Three Hills in Kanyakumari Associated with the Ramayana

Kanyakumari, the southernmost district of India can claim of having several places associated with the *Ramayana*. Among them, the three hills named Thadakamalai, Mahendragiri and Marunthuvamalai, are the most important

believed that the temple at *Darisanamkoppu* was consecrated by Sri Rama Himself to get redemption from the sin of *Sithrihatya* (slaying of a woman). Hence, the presiding deity of this temple is called Raghaveswara (Eswara consecrated by Raghava)



Thadakamalai

Thadakamalai

Thadakamalai, 12 kms. from Nagercoil, is said to be the abode of Thadaka, in the *Ramayana*. At the request of Viswamitra, King Dasaratha, sent his sons Sri Rama and Lakshmana to destroy the *Rakshasas* (demons) who were disturbing his *Yagas* (sacrificial performances). According to local tradition, Thadaka the terrible *Rakshasi* (demoness) was killed at this place and there are remnants of *Homakunda* and the footprints of Sri Rama, near the hill. The red-stained rock, known as "Thadaka-malai", resembles the body of a gigantic woman with matted locks. The village on the foot of the hill is known as *Darisanamkoppu* which is said to be derived from the Tamil words *Thiru Saram Koppu*. It means the place where the arrow of Sri Rama pierced the body of Thadaka. It is

Mahendragiri

Mahendragiri, a lofty peak of nearly 5,000 feet in height, is referred to in the *Ramayana* of Valmiki as the point of the mountain from which Anjaneya jumped over the sea to Lanka, in search of Sita "*Yeshu Vegam Karishyami Mahendra Sikhateshvaham*" (Kishkinda Kanda, Chapter 67, Sloka 40)

The river which flows from this mountain is called after the hero Hanuman. The top of the hill is very enchanting. Undulating landscape, flora and fauna of exquisite beauty, dense forests and luxuriant plantations, combine to create a feast to the eyes of the visitor.

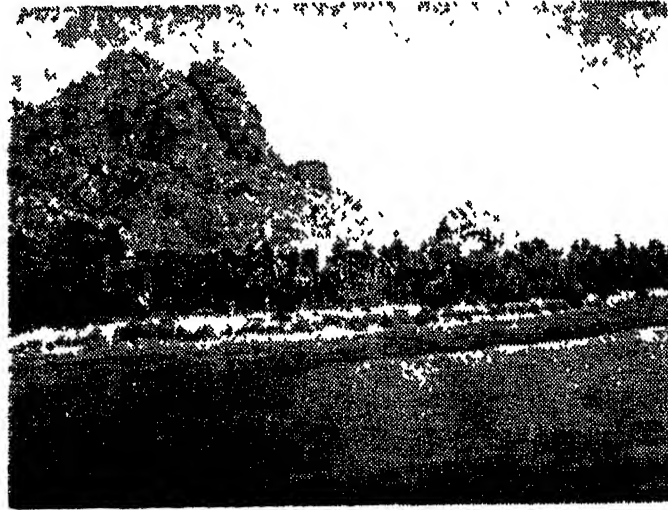
S. PADMANABHAN

Marunthuvamalai (Medicinal Hill)

On the highway to Kanyakumari, there is a hill known as Marunthuvamalai, which means a hill where medicinal herbs grow. This hill is the end of the mountain range (Western Ghats)

The hill has an interesting legend. In the course of the epic battle between Ravana and Rama, Lakshmana, the younger brother of Rama, was hit by Indrajit the eldest son of Ravana, by a *Nagastra* (Serpent arrow) Lakshmana fell down unconscious and Rama was completely perturbed. At this critical stage, Anjaneya was requested to bring Sanjivini, an antidote to all poisons, from the Hima-

was being carried by flight, a chip of it fell down at the spot and it came to be known as Marunthuvamalai. The Siva temple on the lap of the hill is believed to have been consecrated by Anjaneya himself. The shrine is held in high esteem by pilgrims. Karthigai Deepam is the important festival in the temple. On the full-moon day, in the month of Karthigai (October-November), the huge flame at the top of the hill provides an enjoyable sight to the people of the surrounding areas. Even today, this hill abounds in numerous varieties of medicinal herbs. People believe that even the bitter leaves of trees and herbs taste sweet when cooked on the mountain. It is said that Sri Narayanaguru, the revolutionary saint of Kerala, spent several



Marunthuvamalai

layas. Anjaneya reached the mountain and searched for the medicinal herb. Failing to identify it, he uprooted the Gandamarutha mountain itself and brought it to Lanka. Lo! by its fragrance Lakshmana was revived.

Local tradition goes that while the mountain

days on the top of the hill in meditation.

Sanctified by the association with the *Ramayana*, together with the installation of a Sivalinga by Sri Rama and Anjaneya, the district of Kanyakumari became one of the holiest parts of India.



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* **RICE @ Rs. 2 per kg**

- 108 lakh poor families benefitted
- Rs. 108 crores subsidy on this scheme

* **HOUSING FOR THE POOR**

- Permanent houses only—hutment programme dispensed with
- About 70,000 permanent houses completed
- 1.4 lakh houses in phase, costing Rs. 88 crores taken
- up in all 2.2 lakh houses planned
- 1 lakh house sites distributed to poor families

* **EDUCATION**

- Midday meal benefitting 37.45 lakh poor students
- Scholarships to about 13.52 lakh students of Scheduled Castes, Scheduled Tribes and Backward Classes with Rs. 23.74 crores outlay towards pre and post-matric scholarships

* **ECONOMIC SUPPORT SCHEMES**

- Rs. 225 crores to benefit 3.0 lakh Scheduled Caste and Scheduled Tribe families
- Rs. 14.81 crores as margin money to 2.88 lakh Backward Classes families.
- Rs. 7.99 crores for old age pensioners

* **WOMEN'S WELFARE**

- Legislation initiated for equal rights to women in ancestral property
- Budget doubled—from Rs. 7.11 crores in 1982-83 to Rs. 13.52 crores in 1983-84.
- Widows with income less than Rs. 1,800/- per year are given a pension of Rs. 50/- per month.

- **PHYSICALLY HANDICAPPED**

- Separate directorate set up
- Training-cum-production centres set up at Tirupati and Visakhapatnam

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RIVERS AS PER PURANAS

SKANDANARAYAN

The names of the following rivers are found in most of the *Puranas*. This list is based on the *Varaha Purana*

<i>Ikshmathi</i>	Tributary of Ganga, also known as Kali
<i>Ikshala</i>	Border River between Orissa and Andhra
<i>Iravathi</i>	Original name of Ravi in Punjab
<i>Rishikulya</i>	Kalinga town of former Ganjam district is situated on this river bank
<i>Kumari</i>	Rising from Sukthiman Parvatha—flows near Rajagiri in Bihar
<i>Kuhoo</i>	Present Kabul river—Vedic Kubha river
<i>Krithamala</i>	Connected with <i>Matsya Purana</i> —Vaigai in Madurai
<i>Krishnaveni</i>	River in Masulipatnam, Andhra
<i>Kausiki</i>	Bihar's Kosi river
<i>Gandaki</i>	Narayani river of U P rising in Dhaulagiri
<i>Chakshumathi</i>	Oxus or Asaelariya river in Greece Rising in Kethumala Parvatha
<i>Chandrabaga</i>	Punjab's Chenab river
<i>Dasarna</i>	River Gagan of Bhopal District in Bundelkhand
<i>Drishadvati</i>	Ghaggar in Kurukshetra—Vedic river
<i>Narmada</i>	'Reva' of <i>Mahabharatha</i>
<i>Pushpavathi</i>	River rising from Malaya Parvathas and near Rameswaram (South India)
<i>Bhumarathi</i>	Bheema river of Maharashtra—joins with Krishna river
<i>Vithastha</i>	Punjab's Beas River
<i>Viraja</i>	River in Orissa flowing near Jagannath Temple
<i>Vastharani</i>	Famous river in Orissa
<i>Sarayu</i>	River north of Ayodhya
<i>Subha</i>	A river in Kerala.
<i>Vedasmrithi</i>	River flowing between Gomathi and Tamasa

These are some among 86 rivers listed in the *Puranas*. This indicates the value of our *Puranas* in deciphering ancient Geographical conditions over the ages. Some noted authors have written books on these lines. They are worth studying by Indology students.



Map 1—RIVERS OF INDIA

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Source. *Rivers of India* by S D. MISRA,
(National Book Trust, India).



SACREDNESS OF THE RIVERS

K S MANIAN

In what way is a Hindu different from other religionists? It is his love for water, *Jalapriyatha*. Every type of his divine worship is preceded by a bath in holy rivers or sacred tanks. It is because of this, most of the places of worship are on river banks. Visits to such places are termed as *Theerthaatana*. The word *Theertha* in Sanskrit is from the root *Thu*—to cross over. And so these *Theerthas* help Hindus to cross over this worldly life into the spiritual. The sacred rivers in India are known as *Nadas* and *Nadis*. Rivers flowing west like the Indus, the Narmada etc are *Nadas*. Those flowing eastward are *Nadis*—the Ganges, Cauvery, etc, are of this type.

What is there in the waters of these sacred rivers that needs our special attention? It is their special qualities and greatness. Chemically, waters of different rivers differ, though they may appear the same. Their capacity to resist germs of water-borne diseases vary. In some, such germs multiply quickly, in some slowly, and in others, they are destroyed outright. This is an observation made on the basis of scientific investigation by modern scientists. The Ganges waters have inherent powers to kill all cholera germs, too outright. Such is its purifying capacity. This is due to its flow over certain types of mineral rocks on its downward journey.

The sandy beds of these rivers contain sands of different qualities. Some of them are associated with gold dust, some with silver and some with copper. These elements transfer their medicinal properties to the waters that flow over them. On close observation, one can notice different colouration of skin in those who bathe in the Ganges, the Yamuna and the Gomathi. The Ganges water leaves a deposit of white ash on the skin. The Yamuna waters leave a deposit of dark blue. The river Gomathi turns its bathers more darker, but more healthier also.

The rocky bed of the rivers vary in their density. This causes the waters flowing over them to imbibe the three-fold medical qualities known as *Vata*, *Pitta* and *Kapha* of Ayurveda. This is indicated by the type of water-animals

like fish that live in these rivers. The rivers Yamuna and Vethava join near Hamirpur. It has been observed that the Yamuna waters are of *Vata* (windy) type, while those of the Vethava are not so. Thus the rivers possess peculiar medicinal properties conducive to the health of bathers. We have heard of mineral springs of health-spots all over the world.

Coming now to the spiritual aspect of these sacred rivers, we may say that the north Indian rivers flowing through the Himalayas have all their root source in the great lake *Manasarovar* near Kailas. The Puranic history of this lake is astounding. The place was once known as *Plakshasravana*. It was the place of *Kalpaka Vrksa* and the abode of Gods. Yes, it was when Rajaputana, Punjab, Kashmir, Uttar Pradesh, Bihar and Bengal were all under the waters of seas and lakes. Later on, the waters receded, the Himalayas rose up and gave birth to all those rivers with their source at Manasarovar lake having its under currents. It is thus that all these rivers gained their sacredness. Many temples rose up all along the banks of these rivers. All these temples have their own mystic origin. *Brahma Purana*, *Varaha Purana* and others give innumerable facts of ancient history vouchsafing the sanctity of these *Theertha sthalas*.

Kasi (Benares), is one such *sthalas*. It is said that this town is situated over a big rock about 4 miles long. Its ancient name is Kankadi. River Ganges is said to flow below the rock. Great yogins state that *samadhis* of many famous *Siddha Purushas* are to be found in this rocky town. The word 'Kasi' is from *Kas*—to shine. It is a town of light, *Jyothirmaya*. Sri Ramakrishna Paramahansa was a witness to this.

Thus we see the sacredness of the rivers of India both materially and spiritually. They are all *Punya Theerthas* where a devout Hindu believes he is absolved of all his sins through a bath in them.



The Sacred Rivers that Disappeared

Just before the dawn of Man, the surface of the earth underwent many changes. But there were fairly long intervals of stable existence also. The Alpine storm that raged for a long time and settled about a million years ago shattered and sunk the great continent 'Lemuria', in the Indian Ocean.

valley of the river Kumari. In the central part of the region, was the broad flat basin of the river Pahruli. It was sparsely populated. A semi-civilised clan of Gandharvas of the race of Druhyu, the son of Yayathi of the lunar dynasty, lived there in a primitive way as a mountain tribe. Their language and music

THE WORLD - ABOUT 8000 B.C.



A: THE MID-ASIAN SEA

B: THE GOBI (DESERT) SEA

C: KUMARI KANDA

D. MADAGASCAR (PART OF LEMURIA)

E: CONTINUOUS LANDMASS

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CENTRAL AMERICA**

At that time, the southern part of the Indian Peninsula, extended to a distance of about 500 miles, almost to the Equator. It was bordered on the west by the continuation of the western ghats, ending in the multi-folded high mountain, called the Kumari mountain (referred to in the Tamil work *Silappadikaram* 11-57). In the northern part of this region, was the fertile

were sweet to hear. Agastya, the great sage of the Vedic days, decided to colonise the area by bringing in many Yadava families from the north. The 18 clans of these Yadavas are called in Tamil literature as *Padinen Velur*. Under the leadership of Agastya, they set sail (about 6,000 B.C.) from the copper-plated port of Dwaraka and settled in the rich and extensive valley of

river Pahruli. The area of their colonisation extended from Tirupati in the North to the Kumari mountains in the South and was bounded by the ocean on the east and the west. Their capital was Madurai (the original), on the banks of the river Pahruli. This name of the capital was given by the yadavas after their ancient capital *Muttra* on the banks of the Yamuna.

The yadavas also built an excellent port town at the mouth of the river Pahruli and named it 'Kapatapuram' (equivalent of Dwaraka = Gateway town). The great poet Valmiki has extolled the beauty, wealth and culture of this city in his *Ramayana*. The lord of the Pandyas was chosen as the emperor of this land.

Agastya also turned his attention to the cultural and spiritual development of the people. He built 16 temples in Panchavali (Nasik) for the Vedic Gods. At the mouth of the river Kaveri, named after king Kaveri of old, Agastya built a temple for Indra. Lopamudra, Agastya's wife, also built many temples for Mother Worship. At the top of the Kumari mountain she built a temple for the Virgin, Kanyakumari. It was in 2787 B.C. that a great earthquake took place and the temple got submerged!

Agastya Muni was a great grammarian. He established the first Tamil Sangam on the banks of the Pahruli river about 6500 B.C. From 3000 B.C., the west coast of South India began to sink. The southern tip suffered from tidal waves. After the south Tamil country, *Kumari Kandam* finally sank in 2787 B.C. The capital of the Pandyas was shifted to the Tamraparani basin and again shifted to Madurai on the Vaigai banks. The temple for Kanyakumari also was built at the present site at that time.

(This then is the ancient history behind the two lost rivers, Kumari and Pahruli, of the very ancient Tamil kingdom of the Pandyas. Then there is another river in the North of India, the river Saraswati. This too is now no more, but is famous for its sanctity and mythology. It is the river where the first set of human beings are said to have taken their birth. A brief account of this river is given below.)

II

The present Rajaputana desert was a fresh water—sea draining into the Arabian sea. The

Sindhu (Indus) fell into this sea at a point very near the site of modern Mohanjodaro. The Saraswati (the present dry bed of Ghaggar) and its tributaries, the *Apaya*, *Dhrishadvati*, *Ila* and *Bharati* rose in the Sivalik range and flowed into the Rajaputana sea. The Sutlej and Jumna flowed directly into the Rajaputana sea and had their own valleys. The Ganges and the Sarayu fell independently into the shallow eastern sea (present southern and eastern Gangetic plains). The South West monsoon was not there. Strong winds blew from the North-West. The rivers of Punjab were always in flood. It was in this setting that Man was evolved on the banks of river Saraswati.

"This creative centre of Man, River Saraswati, was made by the Devas" —*Rig Veda* 3 33 4

"All life takes its origin from your (Saraswati), womb."

—*R V* 2-4, 9-17

"The land chosen by the Gods between the Saraswati and Dhrishadvati is called *Brahmavarta*. It is so called because Brahma, the Creator descends here again and again (*avartanam*)" —*Manu Smriti*—2-17

"Devahuti, the mother of mankind, the first daughter of Swayambhuva Manu, lived with her husband, Rishi Kardama, on the banks of the River Saraswati" —*Puranas*

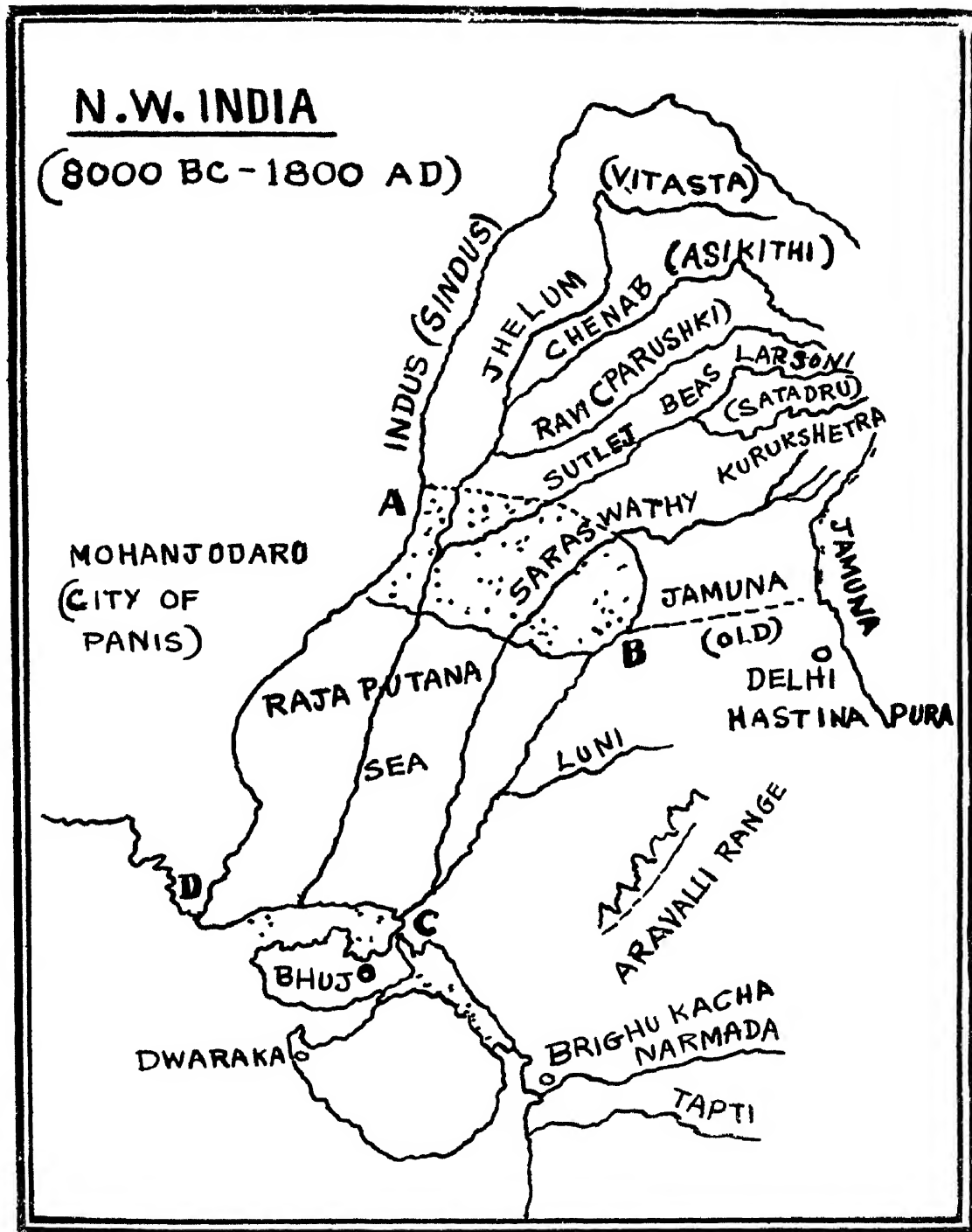
"The *Bhagavat Geeta* had its birth in Kurukshetra, on the River Saraswati."


"The ancient Saptha Rishis—the progenitors of the Human Race, lived in this region of Saraswati."

"The Holy fire was first kindled on the banks of the River Saraswati by the Seers Brighu, Angiras and Atharvan."

"The first astronomical observatory was established here. The meridian of the Saraswati *Triveni* (junction of the rivers *Ila*, *Bharati* and *Saraswati*) is still the prime meridian of Indian astronomers. Ujjain observatory is on this meridian."

Hence, we conclude that the birth and growth of the human race was here in the basin of Saraswati.



A,B,C,D -THE FRESHWATER SEA THAT DISAPPEARED
IN 3000 BC  MARSHY LANDS

The Sivalik ranges slowly rose up when the salt ranges were also formed. This is possibly before the birth of the Himalayas. There was a second pushing up of the Sivalik ranges in recent times when the Saraswati river dried up together with the Rajaputana sea.

About 8000 B C, there was a slight tilt in this Asiatic land mass. The northern parts rose up and the southern coastal area sank down slowly.

The course of the Jamuna deflected and it

joined the Ganga. The eastern gangetic trough dried up and became an extensive plain. The South West monsoon of India was born.

When Rajaputana was a fertile plain, the Indus, Vitasta and the Saraswati canals watered the area. The river Saraswati entered the sea north of Cutch. The famous port Prabhasa, a very holy place, was at its mouth.

The river is now supposed to be an underground river joining the Yamuna and the Ganga at the Allahabad *Triveni Sangam*, the

holiest of holy River sangams.

Sri Aurobindo in his book "On the Veda" refers to the three sacred Rivers Saraswati, *Ila* and *Bharati*. But there we find the symbolic psychological interpretations of the *Rig Veda Mantras*. These throw a lot of light as to how they influence the spiritual growth of man.

(Extracts from the book "Chronology of Ancient Bharath" by Prof. K. Srinivasa Raghavan, Published by Sri Aurobindo Study Circle, Triplicane, Madras-5 in Saka 1896)



“The mighty rivers of India that flow from the great mountain barrier into the plains of India attracted me and reminded me of the innumerable phases of our history. The Indus or SINDHU, from which our country came to be called India and Hindustan, and across which races and tribes and caravans and armies have come for thousands of years, the Brahmaputra, rather cut off from the main current of history but living in old story, forcing its way into India through deep chasms cut in the heart of the north-eastern mountains, and then flowing calmly in a gracious sweep between mountain and weeded plain, the Yamuna, round which cluster so many legends of dance and fun and play, and the Ganga, above all ‘the River of India’, which has held India’s heart captive and drawn uncounted millions to her banks since the dawn of history. The story of the Ganga from her source to the sea, from old times to new, is the story of India’s civilization and culture, of the rise and fall of empires, of great and proud cities, of the adventure of man and the quest of the mind which has so occupied India’s thinkers, of the richness and fulfilment of life as well as its denial and renunciation, of ups and downs, of growth and decay, of life and death”

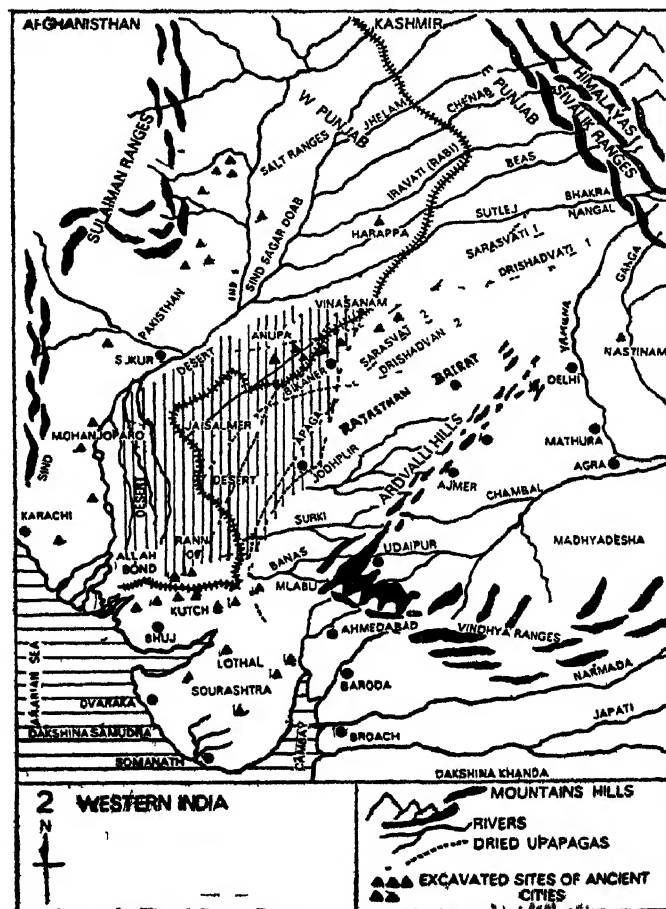
— Jawaharlal Nehru,
THE DISCOVERY OF INDIA, London, 1956, p. 38.

The Vedic River Sarasvati

DR K D SWAMINATHAN

The *Rg Veda*, the earliest Indian document dating from the second half of the second millennium B C adulates the river Sarasvati in the hymns pertaining to the description of the holy rivers¹ The Aagamas and the Smriti literature as well as the *Puranas* endorse this adoration Svaayambhuva Manu, the grandfather of Dhruva, revered this sacred river The *Bhaagavata Purana*², frequently refers to an ancient *aasrama* known as *bindusaras* on the banks of the river Sarasvati Prithu, the first monarch, *aadhuraaja*, established several *janapadaas*, villages and towns along the estuary of this river and is credited with a record of 100 *asvamedhas* at the site where the river Sarasvati originated³ According to *Manusmriti*, this river seems to have disappeared at a site known as *vinaasanam* which could perhaps be identical with the desert in Rajasthan area Geomorphologic and Archaeological research and investigation undertaken during the last two decades have yielded rich data which help in identifying this lost river as the dried up ancient river Sobat,

watering the region to the southwest of Limmu and Seba in South Abyssinia Excavations of the Indus valley and Harappan sites and other arid zones in Punjab, Rajasthan and Gujarat have laid bare the cultural sequences of no less than forty cities, besides a plethora of pictographic seals and sealings with short inscriptions in a script which remains an enigma and which has not been deciphered precisely in spite of the laudable attempts made by indigenous as well as foreign specialists The Scientist Surveyors of the Central Arid Zone Research Institute have done outstanding work in their attempts to trace the diverse course of the river Sarasvati in the sand heaps of Rajasthan desert B Ghose has published a part of these findings in his invaluable study in 1979, for the Geographical Society of London⁴



The Rg Vedic hymns, record that the twin rivers Sarasvatī and Drisadvatī along with the five Indus streams joined the sea at the Gulf of Cambay at the mouth of the Narmada or the Persian Gulf as it was designated. In ancient times, this region was known as Kacca with several islands at its mouth and in the middle, known and referred to in the *Puranas* as Santimatī, Dwaaraka, Panchajanya (Mandvī) and Ramanakam (Sind Hyderabad in Pakistan). The eastern part of this area comprised of parts of west Rajasthan and the vast plains around Mathura and Kurukshetra, described as *Vajrabhoomi* in ancient times and very fertile by the flow of the river and its system of canals. The coastal belt was rather low-lying appropriate to the description as *paataalabhoomi*. The precise dating for this geomorphologic condition is difficult due to inadequate data and evidence. A dating of circa 3000 B C could be perhaps acceptable.

The inhabitants of this region were the *paanchajanyas*, the descendants of Yayaati, bearing the puranic names as Yadu, Turvasu,

Druhyu, Anu Druhyu and Puru. The *Puranas* refer to them as Asuras dedicated to Asura Mahadeva, their great God. In due course, they grouped themselves into a hundred clans as the Yadavas, Haihayas, Kurus, Sandhavas, Yavanas, Dasaranas, Sakas, Turuskas, Nagas and Bhrigus. The Bhrigus were excellent navigators and traded with other countries, and had colonised Phirgia in Asia Minor and the Bhargava Kshetra (the west coast of South India). The *Paanchajanyas* were pastoral rearing domesticated animals as cattle, sheep and horses, subsequently developing agriculture. Irrigation canals were in vogue leading water from the Sarasvatī river for raising crops. The *Mahabharata* refers to a long canal devised by the Kurus to water the area of Kurukshetra. The dried up river, Ghaggar, may perhaps be a remnant of that canal. With flourishing agriculture and trade, many cities and settlements were developed in these coastal and canal regions, the independent city States administered by the different clans. Aagamic and Tantric ritual were in evidence alongside the Durga and Mahadeva cults. The language

Indo-French Team To Trace Course of Sarasvatī

Indian and French archaeologists will make a joint endeavour to trace the course and history of the river Sarasvatī, which in ancient times flowed through present-day Haryana, Rajasthan and Gujarat and subsequently "disappeared" into the earth.

The project, planned as part of the Indo-French co-operation agreement between the Archaeological Survey of India and the French National Centre of Scientific Research, will begin early next year.

In Vedic literature, there are frequent references to the Sarasvatī and its "fertile waters". Both archaeologists and historians believe that the rivers dried up as a result of ecological and climatic changes.

The Indo-French team will take up a Geo-archaeological survey of the region north of the Aravalli ranges. The study will cover the search for the vestiges of the ancient water courses of the Sarasvatī hydrographic network.

An attempt will also be made to reconstruct the history of the people of the region by tracing the evolution of the river's hydrography since the end of the last glaciation.

Emphasis will be on the study of the remains of human settlements along the river course through centuries of its existence.

A pre-project survey of the site has indicated historical evidence of agrarian societies which had developed water management techniques to prevent environmental changes and water stress during the winter months.

The planned ethno-archaeological study is expected to throw light on the agricultural systems and methods practised by the populations of the region.

A detailed analysis of the evolution of the environment and soils is to be jointly undertaken by French and Indian laboratories specialising in farming and arid zone research.

The project also aims at making use of computer techniques to process the data and information provided by the surveys. It is expected to serve as a base for future computer-aided studies of archaeological problems in India.

— 'Indian Express' Dec 25, 1983

used was probably a dialect of Paisaci, which was obsolete later. Paisaci is a Praakrit form of Vedic Sanskrit.

The initial impetus which held to the destruction or loss of this riverine culture was perhaps the famous epic battle—the Mahabharata War, where all the militants were annihilated. Seismic upheavals set the second stage in the destruction. Tidal waves from the Arabian Sea sweeping over the low regions of Western India, arrested the flow of water through the river Sarasvati, which became dry as a consequence and merged with the desert. The *Manusmṛiti* and some of the *Puranas* have adequate references to the disappearance of the river into the northern part of Vinasanam. Sand storms buried the ancient cities and settlements. The Archaeological Survey of India has explored and excavated some of the nearly forty sites after a good deal of effort. All the same, much more intensive work remains to be done. The other notable environmental changes were the submerging of the islands of Dwaraka and Santimati with other islands of the Indian Ocean besides the western coastal strip of South India for eternity without leaving any trace. The narrow strip between the islands of Ramanakam and Panchajanyam were filled up by seismic upheaval of sand and the tidal waves completing the process of merger with the mainland. Consequently, the rivers of Punjab changed their courses to join the sea near the Port of Karachi in Pakistan.

With the formation of the desert, the climate of Western India became extremely dry. There is specific reference to a severe drought and famine lasting 12 years during the rule of Asvamedhaja, the fifth ruler in the lineage of Parikshit, in the *Puranas*. The population had to

evacuate or abandon the region and migrate to different areas in Madhyadesa, to South India, East India and Kashmir. The Sarasvats or Goud Sarasvats in the social hierarchy of India are perhaps the descendants and survivors of the ancient settlements on the estuary of the river Sarasvati.

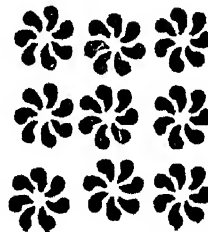
It would be interesting to conclude this brief survey by citing the Vedic references to the seven major streams joining the Sindhus:

(a) Sarasvati with its tributary Drisadvati, (b) Satadru, (c) Vipisa, (d) Iravati, (e) Asikini, (f) Vitasta and (g) Sushoma as registered in the Nadi Suktas⁶.

“Maho arnah Sarasvati Prachetayati ketunaa |
Dhiyo Vishvaa Virajati |

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Symbolism of the Seven Vedic Rivers

NIRMALA GOKHALE

The spiritual and psychological knowledge was concealed in a veil of concrete, material symbols which protected the sense from the profane, yet revealed it to the initiated. Such knowledge given to immature, undeveloped minds could prove dangerous for their growth. Hence they favoured existence of an outer worship, effective but imperfect, for profane and an inner discipline for the initiated. For this purpose, they clothed their language in words and images which had, equally, a spiritual sense for the elect, a concrete sense for the mass of the ordinary worshipper. So, though on one hand the seven rivers are of the ancient Sindhu Panchala region, on the other hand they signify the conscious currents corresponding to the sevenfold substance of the Ocean of Being. It is their full flow in the human consciousness which constitutes the entire activity of the being, the blissful play of the energy.

Though it is difficult to find out the origin of personification of natural phenomena into personal aspects of human life and its fulfilment, which is typically an Indian achievement, a look into the *Vedas* give significant clues as to the inter-relationship between man and nature. One such concept is the origin, flow and merging of river waters from mountains into the infinite ocean. Just to expand one such concept we can take the symbolism behind the seven Vedic rivers.

Saptasindhavah is the phrase used in the *Vedas* to refer to the Seven rivers of the Sindhu-Panchala region of ancient India as, "Thou (Indra) hast let loose to flow the Seven Rivers" (*RV* I. 32.12). The seven rivers referred to are Sindhu, Sarasvati, and the five rivers of the Punjab, namely Vitasta, Asikni, Parushni, Vipasi and Sutudri. The river Sarasvati was lost long ago in the desert sands of Rajasthan. Its course is now represented by the modern dry river-bed of Ghaggar. In the *Vedas*, the phrase *Saptasindhavah* is also used once to refer to the Land of the Seven Rivers as "Who (Indra) will set free from ruinous woe Arya (land) on the Seven Rivers" (*RV* IV. 24. 37) i.e., the holy region in ancient times where the *Vedas* were compiled.

The *Vedas* are studied by modern scholars from the point of rational interest in early history, mythology, and popular religious notions of primitive people. The Indian scholar priests view them as nothing more than books of mythology and sacrificial ceremonies. Among the

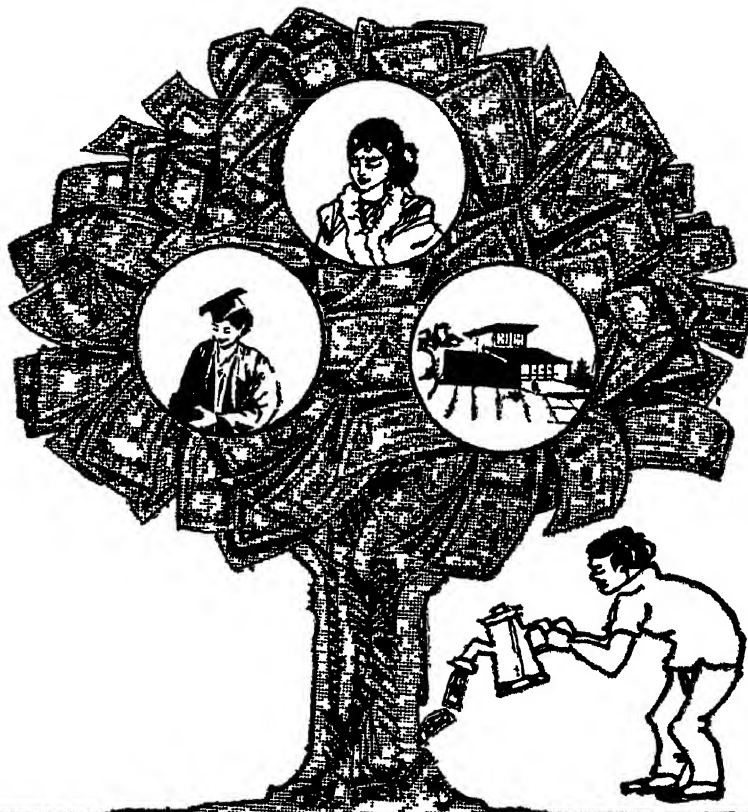
recent teachers, Shri Aurobindo has revealed the secrets of the *Veda* to modern man. He says, "The Vedic indications of a racial division between Aryans and Dasyus and the identification of latter with the indigenous Indians were of a far flimsier character than I had supposed. But far more interesting to me was the discovery of a considerable body of profound psychological thought and experience lying neglected in these ancient hymns. And the importance of this element increased in my eyes when I found, first, that the mantras of the *Veda* illuminated with a clear and exact light psychological experiences of my own for which I had found no sufficient explanation either in European psychology or in the teachings of Yoga or of Vedanta, so far as I was acquainted with them, and, secondly that they shed light on the obscure passages and the ideas of the Upanishads, to which, previously, I could attach no exact meaning and gave at the same time a new sense to much in the Puranas¹.

Thus as he puts it, "The Vedic hymns are the symbolic gospel of the ancient Indian mystics and their sense spiritual and psychological".²

The *Vedas* are the creations of highly intuitive and symbolical mentality. To convey their inner spiritual experience and the spiritual significance of the world around them, the Vedic

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1. Shri Aurobindo, *The Secret of the Veda*, pp. 36, 37, 238
 2. Shri Aurobindo, *The Secret of the Veda*, pp. 36, 37, 238,

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Seers have chosen different symbols. Whenever they wanted to reveal the godheads, powers, visions and the experience of the planes of consciousness to which the normal mind is not familiar, they did so through symbols. But usually they start with the images from normal outward life and from their visible nature make them to express, by implications the spiritual experiences

Let us lift the veil a little and have a look at the seven rivers and waters in the *Rig Veda*. In the three *Riks* of the third hymn of *Madhuchchandas* in which Sarasvatī has been invoked, the last *Rik* is as follows

*Maho amah Sarasvatī, pracetayati ketunaa,
dhiyo vishvā vi raajati*

If it is translated literally it goes as "Sarasvatī, the great river, awakens to knowledge by the perception and shines in all our thoughts". But if it is read in the context of other two verses, Sarasvatī is the power of Truth which we call inspiration. So from this stand-point the meaning of the same verse implies "Sarasvatī brings into active consciousness in the human being the great flood, the Truth Consciousness itself, and illumines with it all our thoughts".

If we see further, we find the *Vedas* full of meaningful images of Ocean, rivers and water. We have to understand that they are not presented in a figurative sense but as psychical symbols. Vamadeva says in one of his hymns, "These move from the heart ocean, penned by the enemy in the hundred enclosures that cannot be seen, I look towards the streams of clarity, for in their midst is the Golden Reed. Entirely, they stream like flowing rivers, becoming purified by the heart within and the mind, these move, waves of clarity, like the animals under the mastery of their driver. As if on a path in front of the ocean (sindhu, the upper ocean) the mighty ones move compact of forceful speed but limited by the vital force (vayu), the streams of clarity, they are like a straining horse which breaks its limits as it is nourished by the waves" (*RV IV 58 5-7*)

Viewed superficially the images are confusing. But what he means is that the divine knowledge is constantly flowing behind our thoughts but is kept from us by the internal enemies who limit the material of our mind to sense-action and sense-perception so that though the waves of our being beat on the banks that border upon the super conscient, they are limited by the

nervous action of the sense mind and cannot reveal their secret. They are like horses controlled and reined in, only when the waves of the light have strengthened them to the full does the straining steed break these limits. And they flow freely towards that from which soma-wine is pressed out and the sacrifice is born (*RV IV 58 9*). This goal is explained as the ocean of Superconscience "May we taste that honeyed wave of thine which is borne in the form of the waters where they come together" (*RV IV 58-11*)

There is a hymn of Vasishtha to the divine waters "May those divine waters foster me, the eldest of the ocean from the midst of the moving flood that go purifying, not settling down, which Indra of thunder bolt, the Bull clove out. The divine waters that flow whether in channels dug or self born, whose movement is towards the Ocean—may those divine waters foster me" (*RV VII 49 1-4*). Yet in another *Sukta* he says, "O waters, that supicme wave of yours, the drink of Indra which the seekers of the Godhead have made for themselves, that pure, inviolate clarity-streaming most honeyed wave of you, may we enjoy today—strained through the hundred purifiers, ecstatic by their self nature, they are divine and move to the goal of the movement of the Gods (Supreme Ocean), they limit not the workings of Indra, offers to the rivers a flood of oblation full of clarity" (*RV VII 47 1 3*)

It is clear that both are referring to the same waters. In many other places it is made clear that these waters are the seven rivers released by Indra from Vritra. Though in Vamadeva's or Vasishtha's hymns there is no clear mention of seven rivers, it is very clearly mentioned in the Vishwamitra's hymn to Agni (*RV III 1*)

In Vedic symbolism, there are three conquests to which the gods are in constant battle with *Vritras*, *Dasyus* and *Panis* to give man herds, water and the lost Sun. It is nothing but a struggle of higher aspirations and lower desires in man, struggle between divine and evil (limited) forces to free the Infinite Consciousness from all limitations. And light, herds and waters symbolise the attributes of that Infinite

We get the connection of the rivers and the worlds very clearly in I 62 4 where Indra is described as "breaking the hill and opening up darkness by the Dawn, the Sun and the Cows. He spreads out the high plateau of earthly hill into wideness and upholds the higher world of

heaven This signifies the widening of the physical consciousness and the heightening of the mental consciousness "This indeed is the mightiest work, the fairest achievement of the achiever, that the four upper rivers streaming honey nourish the two worlds of crookedness" (RV I 62 6) The four higher rivers are divine being, divine consciousness, divine delight and divine truth They descend with their floods of sweetness nourishing the 'two worlds of mind and body

The seven worlds of one existence are Sat,

Chit, Ananda the triple divine or immortal, principles, mind, vital force, body, the triple human or mortal principles and seventh is Swara or Vijnana which is linking the two worlds Swara and three eternal worlds are hidden in the cave, they have been closed to us by the movement of Time Thus breaking of the hill and opening of the higher worlds means transcending Time (transcendental experience) It is clear that the free flow of the seven rivers is the symbol of freedom, liberation or enlightenment, and goal of the whole struggle



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GANGA STOTRA

1

O Devi Sureswarī! O Bhagvatī Ganga! Saviour of the three worlds, of restless waves,
Clear is Thy water circling upon the head of Siva,
May my mind ever repose at THY lotus feet

2

Mother Bhagirathī! giver of happiness, Renowned in Nigama is the greatness of Thy water,
Thy greatness is more than I can know,
Protect me, O merciful one, ignorant that I am

3

O Ganga! sprung from the feet of Vishnu, Whose waves are white as snow, as moon, as pearl,
Remove from me my weight of sin,
Help me to cross the ocean of the world

4

They say that him, O Ganga! who is devoted to thee
Yama can never behold
He who has drunk of Thy clear water
Attains of a surety the supreme Abode

5

O Jahnavī! O Ganga! deliverer of the fallen,
Whose waves are beautiful,
Claving the foremost of mountains,
Mother of Bhishma, daughter of the foremost of *munis*,
Protectress of the fallen, praised in the three worlds.

6

O Ganga! who goeth to the ocean, Ever free of sadness is he who salutes Thee.
Giver of fruit like unto the *kalpa* tree,
By thy favour the woman who looked coldly,
Now casts her loving glances.

7

He who bathes in Thy current, O Mother!
Is never again reborn in woman's womb
O Protectress from hell! O Jahnavī! O Ganga!
O Destructress of sins! lofty art Thou by Thy greatness

8

O Thou who art eternal! O wave of purity!
May Thou, bestower of bliss, refuge of Thy worshippers!
From whose eyes come glances of compassion
Whose feet the lustre of gems on Indra's crown adorn,
Be ever victorious!

9

O Bhagirathi! dispel my illness, melancholy and pain,
As also my sins and all my follies,
Essence of the three regions, necklace of Earth,
Of a surety Thou art my refuge in the world

Excerpts from *Ganga Stotra*

Composed by ADI SANKARACHARYA

Translation by SIR JOHN WOODROFFE

THE GANGA

R K MURTHI

Everything about the Ganga is majestic. Drawn on a grand scale, it provides a super panorama. Those who do not know the deep attachment of Indians to the river can never understand the reverence with which the river is held by the people. For, it transcends reason and logic. It is not the biggest river. Nor is it the longest river. Why then do Indians go into ecstasy when they speak of the Ganga? Because it touches the very core of India life, seeps through the marrow and bones of every Indian, defines without one being aware of it, that the Ganga is the very root of history, tradition and culture of *Bharatavarsha*.

Bhagirath

The Ganga, known as the Bhagirathi, when it emerges from the Gangotri Glaciers, has the restless undulation of a mountain stream. It gushes out, rustles over stone-edges, tumbles over falls, gorges its way through ice bridges, frisks around with an agility which reflects the inner energy. It is something that reminds us how Bhagirath did penance, for thousands of years, to bring the divine Ganga, the river which remained in the world of gods, down to the earth so that his ancestors, who had incurred a curse and waited for salvation, could get purified by the waters of the Ganga. Bhagirath had problems which could have sent any other person, without iron will and grit, to throw up his hands in disgust and dismay. But Bhagirath pursued his objective with tenacity. When he was told that the Ganga would come down to the earth, but that her descent would destroy the whole world, that only Lord Mahesh could stand between the force of the fall and the earth, Bhagirath did penance again to please the Lord. Finally, Lord Mahesh agreed to be the protective media, but the Ganga had its own tricks to play. Proud and arrogant, the river wondered whether it could sweep the Lord of Kailash off his feet. The idea which coursed through the river was guessed by Lord Mahadev. He had a sardonic smile when he caught the river, in his flowing locks and imprisoned it. Not a drop fell off his locks.

Bhagirath was once again in a quandary. He had lost the river in the Lord's locks. Fresh penance was the only alternative he had. He beseeched the Lord to let the river free. The Lord relented. Chastened, the Ganga flowed out, trailing behind Bhagirath, moving over the ashes of Bhagirath's ancestors. Thus did they get *Moksha*. Thus did Ganga become India's most holy river.

The Sanctity

Ganga.. That is a name which comes to the river at Dev Prayag in Uttarakhand district of Uttar Pradesh. It is here that the Bhagirathi and the Alakananda merge and fuse and mix into the Ganga. The river gorges its way between steep rocks and speeds towards the plains. It descends from the heights at Rishikesh. The river here is turbulent, fast, pristine and clear, except during the rainy season. At Haridwar, the river meets the great Indian plains. Both Rishikesh and Haridwar thus get linked with the river and get the touch of holiness. The whole area around the two small towns, separated by about 10 miles, carry the scent of divinity. Swarms of pilgrims gather here every day to take dips in the river. They mumble the names of the river, mutter praises of Vishnu and Mahesh, sing bhajans of Tulsi Das and Kabir and Meera, feeling all differences of caste and region and language summerge and vanish under the potent force of the river. There is no base thought which lingers on as the pilgrims stand and watch the river rush as if it is in a hurry, down to the sea. Devotees offer *thalis* loaded with flowers, lit by diya, let them gently down, showing as much care as a ship-builder displays while launching his ship, go into ecstasies when the *thalis* float gently over the swirling stream and swing with undulations before speeding away.

Scope for Irrigation

It is at Haridwar that the Ganga reveals fully what it can do, once it is guided by the technical skill of man, to provide water for irrigation. It was in 1865 that the Upper Ganga Canal was opened. It covers, through its canals

and waterways, a distance of nearly 6,000 miles. It irrigates vast tracts of land over 1,200,000 acres. The alluvial soil, rich and fertile, supports all sorts of crops. wheat, rice, cotton, grams, oil seeds

The Lower Ganga Canal, which through its meandering sub-canals, covers a distance of 5,120 miles, taking away some of the water of the river at Naraura. This was cut in 1880 and provides irrigation facilities to about 1,000,000 acres of fields. The two canals together form, in a way the life-line of India. That, beyond doubt, gives yet another justification, if any was needed, for the intimate link between Indians and the Ganga.

At Rishikesh, we hear the names of great savants like Swami Sivananda. We also hear of the determined fight which has been put up by Sunderlal Bahuguna, the leader of the Chipko Movement, to draw our attention to the havoc played by rapacious contractors and wily forest officials to decimate the thick vegetation in the catchment areas. He has been fighting, without any rest, for the maintenance of ecological balance. It is his individual style of paying homage to the Ganga. It is his concern for the river and the people whom the river serves. For without the vegetation, the river will sweep with it the rocks and the soil, lose its own perennial source of water, become less effective as a source of water for irrigation. Of such love is the Ganga sustained.

Pollution Threat

The water is clear, generally, at Haridwar. But when the river reaches Kanpur, it gets polluted due to the industrial waste which flows into it, because of the sewage pipes which gorge out human waste into it.

Kanpur, the industrial centre of North India, is also a historic city. It was here that Nana Saheb raised the banner of revolt and fought in the great freedom struggle of 1857-58. He became a martyr for the cause.

The river moves over to Allahabad. No longer is the river nimble and agile. It is meandering. At Prayag, near Allahabad, the Ganga meets the Yamuna. From down under comes the natural spring Sarasvati. The three merge to give the place an extra coat of holiness. A dip in the river at the confluence is considered by all Hindus as the best way to purify themselves, to wipe out the sins of our generation.

Allahabad and the Ganga are intimately bound together. Pandit Nehru too is very closely connected with the town and the river. He has paid the best tribute to the river in his will. He says, "The Ganga especially is the river of India, beloved of her people, around which are intertwined her racial memories, her hopes and fears, her songs of triumph, her victories and her defeats. She has been a symbol of India's age-long culture and civilisation, ever-changing, ever-flowing and yet ever the same Ganga. She reminds me of the snow-covered peaks and the deep valleys of the Himalayas.. Smiling and dancing in the morning sunlight and dark and gloomy and full of mystery as the evening shadows fall. A narrow, slow and graceful river in winter, and a vast and roaring thing during monsoon, broad-bosomed almost as the sea... the Ganga has been to me the symbol and a memory of the past of India, running into the present and flowing on to the great ocean of the future"

Can there be a more effective tribute that one can pay to the Ganga?

Holy Places Associated with the Ganga

The river creates a history of sorts at Varanasi and lends glory to the abode of Kasi Viswanath. Here, the river becomes *Uttaraganga*. It flies against the accepted norms of movement of rivers, rising in the Himalayan ranges, flowing down to the seas by taking a southward path. At Varanasi, the Ganga flows from south to north. That may be explained by a scientist as the natural tendency of water to flow from a higher level to a lower level. But it is unusual for a river to move from south to north. That is a special feature of the Ganga. It is this that gives significance to Varanasi.

It is the holiest of holy places. To die at Varanasi is to free oneself from the cycle of births and deaths, to become a *Jeevanmukta*. Many people, who have lived fruitful lives, retire to Varanasi. They shed, one by one, the bonds which bind them to mortality. They find solace in the divinity which pervades the town. There is the temple with its continuous flow of devotees. There are the ghats where one can take bath, offer ablutions to the Sun God, morning, noon and evening, find peace which, after all, is something that is more precious than all other things in the world.

The Ganga also has always flowed through centres of knowledge. Varanasi was the place

for Vedic knowledge. Early in this century, Annie Beasant and Madan Mohan Malaviya established Varanasi as the seat of modern education too. The Benares Hindu University gained prestige. Technical education became one of the fields of study at the University.

The river moves on, rather sluggishly, may be reluctant to tear away from the holy city, where it is hailed again and again by thousands of worshippers with the call, '*Ganga Ma Ki Jai ho*'. On the way, it irrigates thousands of acres of land. It passes through several historic places where civilisations had risen, developed and died. The river regains holiness as it reaches Gaya.

Gaya is intimately associated with Gautama Buddha. Buddha Gaya lies about seven miles off. Yet it is Buddha who springs to mind when the river flows through Gaya.

The river takes two different courses. One of the streams now cuts through Bangladesh. The second stream goes through Murshidabad, Chandernagor and then to Calcutta.

In Bangladesh, the Ganga joins the Brahmaputra and gets renamed as the Padma.

Dakshineswar! It is another place glorified by the river. In its pristine touch, Ramakrishna Paramahansa found salvation. Here he lived, inspiring the people to veer away from the path of materialism and to strive their utmost to see the divinity latent in them. He breathed the fire of dedication into Swami Vivekananda, when the young mendicant, who had absorbed the best of values from the great sage and bathed and swam in the river Ganga, took the World Parliament of Religions held at Chicago by storm, and gave an indication of the strength that he drew from the guiding forces. The Ganga purified him. The great sage removed the lingering fetters of mortal fear.

The Ganga reminds us of many things of the battles fought, of the victory which Clive gained at Murshidabad to lay the foundation of the British Raj, of the traders, their goods laden in native boats, plying upstream, selling their wares *en route*. Till the railways were laid, the river remained the main artery of communication.

A few years back, the spirit of adventure of Edmund Hillary, the Everest conqueror, received a big boost when he sailed upstream in a

motor boat starting from Calcutta all the way to Haridwar.

When the river approaches the sea, there is a vast, expanding delta. Where does the river meet the Bay of Bengal? Where? Oh, where? It is difficult to say. Eric Newby noted, "Perhaps, materially, the end of the Ganga is under the sea 60 miles south, where the long tails of sand run down towards the deeps of the Bay of Bengal, depositing the detritus of India on the bottom, or even further. Four hundred miles, out in the Indian ocean, the sea is discoloured by the silt brought down by the Ganga. So there is no end to the river, just as no one on earth knows the exact place where the river begins."

A true measure of the Ganga can be seen in the above comment "*Adi Antham Illa nadi*" a river without a beginning or an end. That is the quality which we give to God too. Why should people hail a mere river as holy, worship the river with such reverence? Because it has been around the river that the earliest people thrived. Because the river sustained life. Because the river provided the water for irrigation. Because it provided the main means of transport to long distances. Because it was the very thing on which human life depended. Because its every mood touches the people. (When it overflows its banks, it leaves alluvial deposits which prove beneficial to crops). Because it backs up the economy. In brief, the river is the very backbone of India. It was Dr. K. L. Rao who sensed how the river could become truly Indian when he suggested the linking of the Ganga with the Cauvery. This remains still a dream. But it is not beyond the realm of realisation. It has to be done. The sooner we do it, the better. For, even when we pray, even when we invoke the river gods to purify the water in the Kalasa, we chant, "*Gangecha Yamune chavave Godavari Sarasvati/ Narmade Sindhu Kaveri/ Jalesmin Sannidhim kuru*". The Ganga leads the rivers. It is the holiest of holy rivers. If we can bring about a fusion of the river with the rivers Narmada and the Krishna and the Cauvery, not only will the water of the river which flows down into the sea be harnessed to cultivate more land, but the rivers mixing together will lend the true concept of Indianness and strengthen the nation against divisive forces.

Ganga Mayya, tere mahima aparam paar. Who can truly cover the greatness of the Ganga which defies descriptions?



I. The Earthly Course

Sri Rama, led by Viswamitra, reached the shores of the Ganges. There, the sage narrated the story of the Ganges. Himavan, the lord of the mountains, was blessed with two daughters through his wife Mena. The elder was Ganga and the younger Uma. The Devas courted Ganga and so she was given to them by Himavan. Thus, Ganga entered Devaloka.

King Bhagiratha of the Solar race came to know about the fate of his grand-parents, cursed by Sage Kapila. He decided to redeem their souls by offering the waters of Holy Ganga of the Heavens. He performed severe penance on the Himalayas. Brahma appeared on the scene and directed Bhageeratha to pray to Lord Siva who alone can bear the pressure of Ganga if She were to descend from the heavens. And so did Bhageeratha please Siva by a further course of severe *tapas*. Siva agreed to receive Ganga descending from above.

Ganga proud of her might as a resident of the heavens thought of crushing down Siva to the nether world and so came down with the heavy force of a mighty waterfall. Siva, the all-knowing yogi, decided to outwit Ganga by holding her bound by his innumerable matted hair. Poor Ganga could not come out of that mesh. To make the best of her failure, she began to like that place itself.

Bhagiratha was noted for his indomitable spirit. He once again prayed to Lord Siva to release Ganga for being taken to the nether-world. She had to come out of the cavern. Seven were the streams that flowed from the head of Siva. Of them, three took the eastern path. She came to be known as Hladmee, Pavanee and Nalinee. Towards the west, flowed three more streams known as Suchakshu, Seetha, Sindhu. The seventh, Alakananda by name, followed Bhagiratha to the plains of Aryavarttha. All hailed the sacred stream as, 'Ganga'—the one who came from the sky to the earth (Ganganath Gam Gatha=Ganga).

On her way to the plains, Ganga flowed across

the Ashram of Jahnu Muni and spoiled his sacrificial fire. The angry rishi drank the waters. Ganga disappeared. The Devas, Gandharvas and the rishis prayed to Jahnu Muni with the promise that Ganga will be named as Jahnavee. Pleased with this idea, Jahnu let out the waters through his right ear. Jahnavee now followed Bhagiratha, to the ocean, "Sagara." Thus, she reached as an ocean current the nether world to cleanse the spot where lay the sagara's sons in the form of an ash heap. Thus did Bhageeratha fulfil his duty of raising his names to the heavens by purifying their ashes with the waters of the heavenly Ganga.

As Ganga flowed in the three worlds, the Heavens, the Earth and the Nether World (*Pathala*), she is known as *Tripataga*.

There is a place known as California in North America. Nearby are two islands known as Horse Island and Ash Island. Our historians refer to these places as Kapila's abode (*Calpa aranya*. *Calpa* being distortion of *Kapila*) where the sagara's sons and their horses were burnt to ashes by Kapila Muni.

This descent of Ganga, as described by our Poet Valmiki in his *Ramayana*, *Balakanda*, is considered as a sacred episode. Further, it emphasises the birth of the adage, 'Pride hath a Fall'.

This episode of River Ganga, whose presiding deity is Mother Ganga, daughter of Himavan, has its source in another account of Ganga's descent as a result of a curse thrown upon her in her previous birth. About this, we see in the next part.

II. The Curse upon Ganga

Sri Narayan, the Supreme Being, had as his consorts, Lakshmi, Saraswathi and Ganga. Once Ganga looked smilingly at the Lord in the presence of His other two consorts. The Lord reciprocated the gesture. Saraswati got angry and said to the Lord, "A husband should treat with equality his consorts without being partial

THE DESCENT OF GANGA

A wife deprived of the love of her husband, lives in van" Lakshmi tried to pacify Saraswathi by pleading for forgiveness towards Ganga. But alas! Saraswathi turned her wrath against the intruder and scolded Lakshmi in the absence of their Lord. She then began to take hold of Ganga's hair. Again Lakshmi intervened on behalf of Ganga. This was too much for Saraswathi. She cursed Lakshmi to become a tree as well as a river. Lakshmi showed patience even then. Ganga then began to curse Saraswathi for her impudence. "Oh Saraswathi, you too will become a river that flows below the earth, in the nether world." The Lord who reappeared on the scene said to Lakshmi, "You will be born in the house of Dharmadwaja, on earth. You will then become a tree there itself. But your name as Tulasī will become famous in the three worlds. Again in another aspect, you will also become a river to be known as 'Padmavathi'."

Turning to Ganga, he said "You will become the river, Bhagirathi, as a result of Bhagiratha's Tapas. Also, you will in another aspect become the wife of Santanu, the King."

"You too will be born as a river in accordance with the curse you got now. All of you will suffer thus for the quarrelsome attitude you all took."

He also explained that their presence on Earth in the form of rivers has become necessary with the advent of the Kali Age when mankind will turn sinners.

As a result of the curses mutually indulged in by the three heavenly damsels, they were re-born on earth and finally attained the status of the consorts of Brahma, Vishnu and Siva.

Coming now to Ganga's story, the curse upon her proved a blessing for the *Ashtavasus*, the eight divine guardians of wealth—spiritual and temporal.

Once the *Vasus* passing over the ashram of Vasishtha, saw his holy cow, Nandini. One of them stole away the cow. And so Vasishtha cursed all the *Vasus* to be born on Earth as humans. Sad at the turn of events, the *Vasus* met Ganga and requested her to help them. One of them said, "O Ganga, you are going to be born on Earth like us due to curses upon us. Kindly accept our request to become our mother there. We also request you to throw away into the river our human bodies the moment we are

born so that our curse will thus terminate." Ganga agreed to do so.

Mahamisha, a king of the Ikshvaku clan was known as Rajarishi, Santhanu. The king fell in love with Ganga in Brahma's court. Once, when he was in a forest, hunting, Ganga appeared before him and sought his hand in marriage. The king was only too happy to accept her. But she placed before him a condition to be fulfilled by the king without demur. She said, "You should not prevent me from doing anything I wish to do, even though you may hate such an action. If you fail in your promise, the next moment I will leave you." Out of sheer love, the king promised to obey her condition. In course of time, Ganga gave birth to seven sons, one by one, all of them being the *Vasus* cursed already. She mercilessly threw them away into the river even as the king was looking helpless. The eighth son was also born. Ganga was about to throw the child when Santhanu stopped Ganga from doing so. Ganga at once said to the king, "You have now broken your promise. I will therefore leave you now. The children born to me were all *Vasus* who were under a curse. Anyhow as you are eager to have a son as your successor, I will not kill this eighth child. I will hand him over to you only after a few years." So saying, she disappeared with the child. This was the Bheeshma or Gangeya of the *Mahabharata*.

Thus we see the Puranic 'Ganga', in continuation of the *Itihasa* Ganga. The story of 'Ganga' has one more aspect that follows.

III. Ganga, the Icy Maid

Himalayas, the abode of snow, is also the home of Lord Siva. While the Lord was asleep, his tangled hair, 'Jatabaraan' was played with by King Frost. The snow maidens and ice-maidens of his court hung as ice drops on the hairs of his head and face. Siva slept for a very long period. The heat of the sun burnt up cruelly the green herbs and glorious trees of the mountain. Rivers were not there to water them. People all around cried aloud to Siva for water, but the God was asleep.

Himavan, the king of the mountains, had a daughter Ganga by name. One day, she happened to come near the beautiful ice-cavern formed over Siva's matted hair. Delighted at the interior sight of the cavern with pillars of ice holding up the lofty roof of the cavern, she

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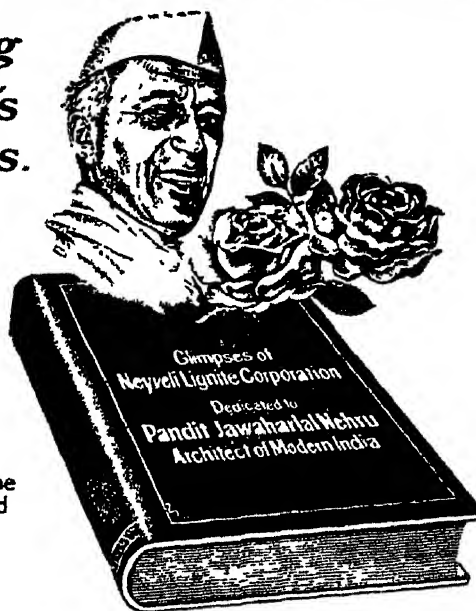
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31 Schools in Neyveli Township educate a student population of about 32,000. One of them is fondly

named Jawahar Higher Secondary School. 18 Schools are maintained by Neyveli Lignite Corporation.

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Neyveli Lignite Corporation employs over 19,000 employees. For popularising the small family norm in and around Neyveli, NLC bagged the FICCI small Family Award for 1981. The birth rate at Neyveli has been brought down to a meagre 4.3 per thousand as against the national average of 30 per thousand.

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Lignite also known as Brown Diamond contributes towards turning Neyveli Township greener. The mined-out areas have been reclaimed for cultivation and also converted into beautiful landscape gardens. Over 15 lakh saplings were planted in 1982-83. This year so far about ten lakhs saplings have been planted.

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Panditji, on this occasion, we fondly remember the inspiration you gave us by visiting Neyveli twice, first in 1957 to inaugurate the first mine and again in 1963. A rare privilege indeed.

Today, we at Neyveli Lignite Corporation are proud that we have made your dreams come true. We re-dedicate ourselves to work harder, and live upto your cherished ideals and aspirations, dear Panditji.



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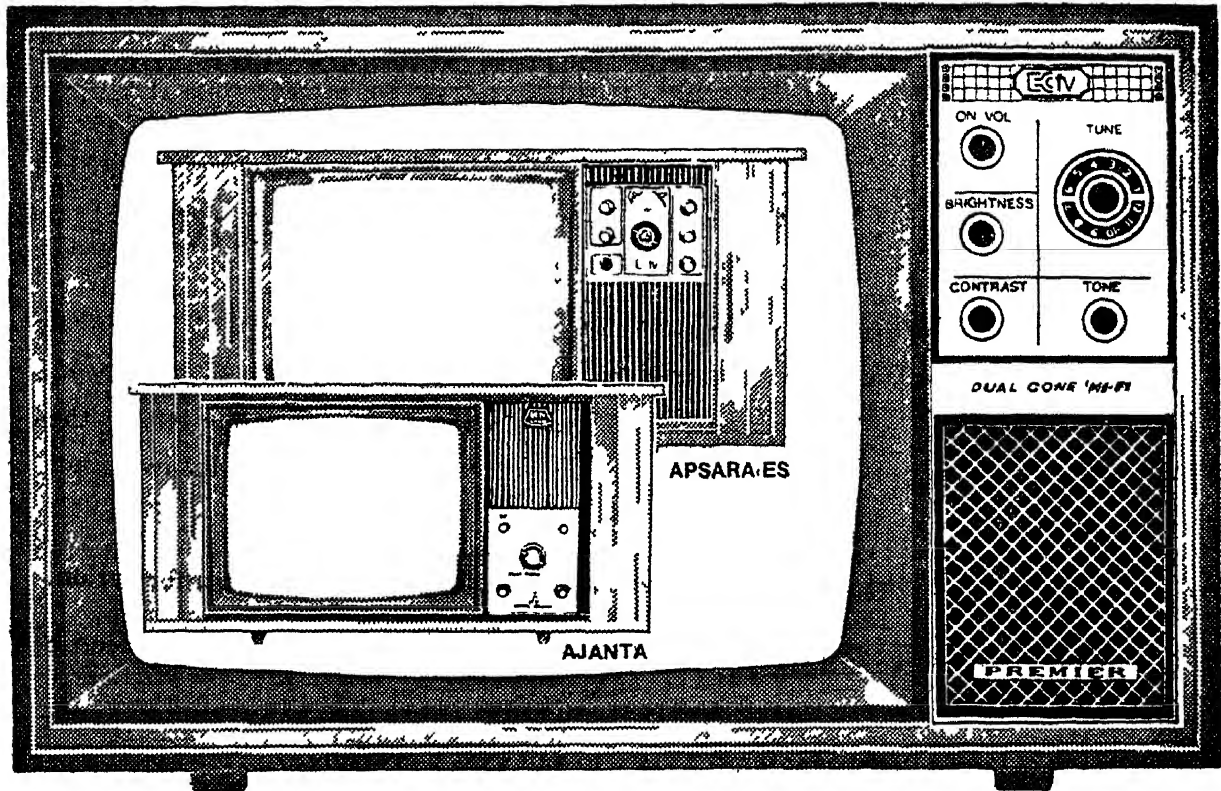
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ran into it. She had no mind to go out. Not only that. She lost her way out of the meandering paths inside the cavern. Himavan with his wife Mena, went out in search of Ganga. They met her inside the cavern and decided to stay there itself for sometime. Once, the king went out to see the parched condition of his country and his people dying of thirst. When he returned with a saddened heart, Ganga greeted him. At that time, a soft breeze blew into the cavern. The ice-wreath on the head of Ganga slowly melted and sweet water fell in drops. The king at once thought of a remedy to allay the sufferings of his drought-ridden people. He requested his dear daughter Ganga, cold as ice and white as snow, to enter the plains and help the thirsty folk. But, Ganga was not ready to do so.

One day, Himavan, came in with a child dying in arms. Its skin was blistered with heat, lips black and parched and the mouth open. He laid the child on the lap of Ganga. As she looked down upon that poor child, a drop of water fell from her hair on the parched throat of the child. Suddenly, the child opened its eyes and laughed for joy. Ganga sprang to her feet.

"Aye, I will go, father, mother, I will go to save the people," said she. The beauty of a great sacrifice came into her face. She left the cavern into the open space. Her form melted away. A stream of pure water with white flakes of foam danced over a bed of golden bright sand. The water whispered as it ran. "I am Ganga, Ganga, and I go to bless the thirsty plains, and to carry life to those dying for my stream."

Wherever she turned, flowers sprang up to welcome her, steady trees bowed over her waters,

and fainting cattle grew strong as they stood knee-deep in her shallows, children played and romped with her wavelets, strong men bathed in her torrents and fair women laved their bodies in her pools. And Ganga, the maiden became Ganga, the mother, giver of joy and life and fertility to the broad plains of Aryavarta.

As she rolls on towards the sea, Ganga murmurs to herself: "To give oneself for others is duty, to spread happiness around one's steps for others to gather up is truest joy."

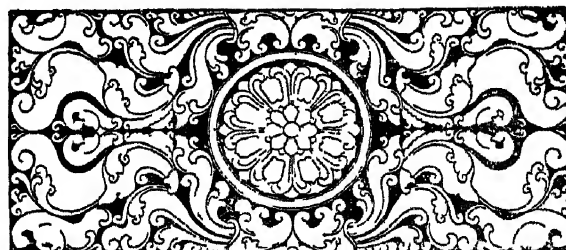
And to this day, the Hindu, dying far-off from the sacred river prays that his ashes may be thrown into Ganga's red-brown depths, and dying lips cry with their last breath, "Ganga, Ganga", and dying eyes for their last look of Ganga's broad, pure stream."

—"*Lotus Leaves for the Young*" by Besant

This then is the legendary tale of Mother Ganga, the Icy-Maid, told by the great and noble personality, Annie Besant. It is really a beautiful recast of Bhagiratha's story in a different but modern light.

Let us just stop over and compare the purity and sublimity of the thoughts about such life-giving sacred rivers of Bharat with the present-day thoughts of considering these rivers as the dumping ground for all dirty things that pollute and poison its waters!

O Mother Ganga. Save us from such sinful acts.



THE POWER OF GANGA

The waters of the Ganges are considered to be "white, sweet, clear, tasty, healthy, digestive, besides being a remover of sins. They remove also mental illusion and sharpen the intellect" as per an old manuscript, *Bojana Kuthuhala*. Ancient Ayurvedic scholars, Charaka and Vaghbata, have declared that Ganga waters are very healthy. Yes, it was surely so centuries ago when mankind dared to think of polluting natural waters of the land. It is because of this, Westerners as well as Muslims took a great fancy for these waters.

In his travel notes, Ibn Bathutha, (1325-54), wrote as follows. Sultan Muhammad Tughlak used to get Ganga waters for his use. It took 40 days to reach Daulatabad.

"Emperor Akbar considered *Gangajal* as nectar. At home and away on tour, he drank only *Gangajal*", so says Abul Fazal in his book 'Ayeen Akbaree'.

The French tourist Burnier (1459-67), writes in his travel notes that *Aurangzeb drank Gangajal* only. Its supply was regulated by camel trips laden with water bags. Many such travel notes mention about the popularity and purity of *Gangajal*. According to one, Hindus used to supply *Gangajal* to all guests at the marriage for drinking after the meals. Rich men spent money freely in getting *Gangajal* for such functions.

The Peshwas of Poona arranged for bringing *Gangajal* in 'Kavadis', (shoulder-borne water pots) from Haridwar and Gadamukteswar.

Supplying drops of *Gangajal* to dying patients is a custom still in vogue. In certain cases, such persons were saved from death by drinking *Gangajal*. In 1525 A.D., the King of Vijayanagar is stated to have survived death thus.

Buddhists too have veneration for *Gangajal*. Thuseelamane, a Buddhist, got a plot of land from Lord Hastings at the close of the Bhutan war. He built a temple and a Murti on the shores of the Ganges. It is known as 'Botwagon' murti.

The chemical examiner of U.P. and M.P., Dr. Hamavari Hamkin, has in one of his letters, (1896 A.D.) to a French Journal of the Pasteur Institute, disproved the belief that the polluted waters of the Ganges were responsible for the spread of cholera in those areas.

In 1894, a session of the 'Indian Medical Congress', took place. A paper on "The microbes of Indian Rivers", was read then. Here are some interesting facts on this subject.

In summer, the Yamuna waters were taken to a spot 5 miles off Agra. There were about 75 microbes per c.c. of this water. Nearer Agra the number was about 700 per c.c. At the town itself, the number rose to 25,000. About 12 miles further down the river, the number came down to about 100. Thus it was shown that the Yamuna has its own purificatory power to neutralise these microbes.

Experiments to watch the growth of microbes in the Ganges water and well-water were conducted. In 48 hours, well waters showed an increase of only 1000 microbes whereas the Ganga waters showed a decrease of 7,000 microbes. But, the Ganga waters lose their power of destruction of microbes by heating the waters. It is hence considered a sin to boil Ganga water for drinking purposes. The Yamuna too had the capacity of destroying 4,200 microbes in 2 hours. Even the polluted waters of these two rivers were found to retain their microbe killing properties. That is why Ganga waters kept in sealed tins never develop microbes irrespective of time limit.

Such is the unequalled capacity for purification of these waters. But alas! Modern civilisation has stooped low to disregard this sanctity of the waters. Merciless pollution by all means of these waters go unpunished in the name of economics of productivity and others. It is really heartening to note that Mother Ganga has re-established her sanctity through the recent 'Ekatmata Yagna'.

Jay Ganga! Ganga Mathaki Jay!!

—LIBRA

Source *Kalyan* (Hindi)



★★★★★★★★★★★★:★★★★★★★★

PURANIC THEERTHAS

★★★★★★★★★★★★:★★★★★★★★

SKANDANARAYAN

Our *Bharata Varsha* is known as 'Karma Bhoomi' as against the other continents that are 'Bhoga Bhoomis'. Souls born in our land get an opportunity to rid themselves of the cycle of Births and Deaths. The numerous sacred spots and sacred rivers in our land are the places for performing the various religious rites that enable the souls to gain Moksha or release from the bondage of such births and deaths.

Such sacred spots are called *Kshetras* and the sacred rivers and tanks are called *Theerthas* (from the root 'Thr'=to cross over). These *Theerthas* exist in all the three worlds—*Swarga loka*, *Marthya loka* and *Pathala loka*, i.e., the Heavens, the Earth and the Nether worlds. Further, they are classified into four groups named: *Deva Theerthas*, *Asura Theerthas*, *Arsha Theerthas* and *Manusha Theerthas*. The origin of these *Theerthas* is the criterion for this division.

I. Deva Theerthas: 12 Rivers

- a) Bhagirathi, Narmada, Yamuna, Saraswathi, Visoka and Vitasta—all the six

lying between the Himalayas and the Vindhya

- b) Godavari, Bheemarathi, Thungabhadra, Krishnaveni, Tapti and Payoshnee—all the six lying south of the Vindhya. These twelve have their origins associated with the Devas, Brahma, Vishnu and Siva.

II. Asura Theerthas

Gaya, Kollasura, Vritra, Tripura, Andhaka, Hayamoordha, Lavana, Namuchi, Srngaka, Yama, Patalakethu, Maya and Pushkara are the names of Asuric Personalities. Rivers associated with these names are all *Asuric Theerthas*. These Asuras or undivine personalities by dint of their strenuous penance, pleased the gods to such an extent as to get their names perpetuated by these *Asura Theerthas*.

III. Arsha Theerthas:

The sacred rivers that were sanctified by the presence of our ancient Rishis and Munis are called *Arsha Theerthas*. Prabhava, Bhargava, Agasthi, Nara-Narayana, Vasishtha, Baradwaja, Gouthama and Kasyappa are the Rishis and Munis concerned with the *Arsha Theerthas*.

IV. Manusha Theerthas.

Ambareesha, Harischandra, Mandhata, Manu, Kuru, Kanakala, Badraswas, Sagara, Aswayoopa, Nachiketa, Vrishakapi and Armadama are the great human personalities associated with the *Manusha Theerthas*.

Those sacred rivers in the three worlds that have their origins self-created are known as *Punya Theerthas*, Ganga, Kaveri, etc are of such type.

The following are the names of other *Theerthas*:

Dasaswamedha	Ilatheertha	Apasthamba
Paisacha	Chakra	Sukla
Kshudha	Pippala	Lakshmi Banu
Ahalyasangama	Naga	Kanga, Atreya
Janasthana	Mathru, Avigna	Parushni
Aswatheertha	Sesha Theertha	Narasimha
Banu Theertha	Aswatha	Sankahrada
Aruna-Varuna-Sangam	Sanvaischara	Kishkinda
Garuda	Danvantari	Vyasa
Govardhana	Sri Rama Theertha	Krisatarpana
Swatha, Sukra, Indra	Putra Theertha	Saraswata
Poulasthya, Agni	Yama, Agneya	Sinchika
Rinamochana		
Suvarna Sangam	Kapotha Ulooka	Badra, Patatri
Pururava Pancha	Vrishakapi	Vipra, Chakshu
Samee, Soma	Abjaka	Samudra
		Rishisatra



THE HOLY PUSHKAR



DR. N. GANGADHARAN

It is an unusual occurrence that there is a big pool of water in the middle of the desert. This is what one reflects, as one reaches the Pushkar lake near Ajmer in Rajasthan. The Pushkar lake is situated seven miles west of Ajmer. Ajmer is on the Delhi-Ahmedabad metre-gauge railway line, at a distance of 444 kms. from Delhi via Jaipur and 131 kms. from Jaipur. The Nagapurv or the Serpent mountain lies between Ajmer and Pushkar.

Some extraordinary virtue of the land, the water and the abode of saints makes it a holy place, states the Kasikhand of the *Skandapurana*.

*Prabhaavaat adbhutaat bhoomeh salilasya cha
tejasaa |
Paragrahaan Muneenaam Cha Teerthaanaam
Punyataa Smritaa ||*

Similarly, the Pushkar that enjoys the great reputation as the king of the holy places is frequented by millions of Hindus every year, especially in the month of Kartika (Nov-Dec.)

The *Padmapurana* (Srishti Chs 15-19) describes Pushkar in detail. In the course of going round the earth, Brahma is said to have come across the forest near Pushkar. Brahma was fascinated by the place abundant with green trees and fragrant flowers. Condescending to their request, Brahma decided to stay there for a thousand years. He had the lotus in his hand. Once while he was there, he dropped his lotus on the ground which created a tremendous sound, shaking the earth. Brahma explained to the Gods that he killed a demon called Vajranabha who was killing young children. The lotus which he had in his hand was sanctified with *mantras* and it served as a weapon. The place where the lotus was thrown was known thereafter as the Pushkara Tirtha. The word *pushkara* means a lotus. It is stated that the lotus rebounded at three places and water issued forth from the ground at all the three places. They are known as the Jyeshtha, Madhya and Kanishtha and are situated within a circuit of six miles. Lords, Brahma, Shiva and

Vishnu are the respective presiding deities of these three holy places.

There is an interesting story relating to Brahma being worshipped by men. Once, Brahma had resolved to perform a sacrifice at Jyeshtha Pushkar with his wife Savitri. But, as Savitri was late to come, Indra secured a cowherd girl at the request of Brahma. She was sanctified and was known as Gayatri. Brahma married her and commenced his sacrifice. Shiva was pacified when he interrupted. Later, Savitri came and became angry to find Gayatri in her place. Savitri cursed Brahma that none would worship him. She moved to a hill south of Pushkar. There is still a temple dedicated to her.

The town of Pushkar is located near the lake. It is a famous pilgrimage centre for Lord Brahma. Every year, a great fair is held here on the full-moon day in the month of Kartika. The invisible river Saraswathi (tributary of the R. Ganges) after its disappearance at Vinasana near Kurukshetra is said to be starting from this lake. The Brahma Ghat, Gaughat, Kapalamochana Ghat, Badarighat and Svarupghat are some of the famous ghats on this lake. There are temples of Brahma, Badrinarayan, Varahaji, Atmesvar Mahadeo and Savitri. Among these, the temple of Brahma is the biggest and the most important. Most of the original temples have been destroyed and were later rebuilt.

We would find the image of Brahma with four faces with Gayatri on the left and Savitri on the right in the temple of Brahma. There is the hermitage of Sage Agastya near the sacrificial pit at Pushkar. It is declared that the annual ceremonies for the manes performed at Pushkar is highly meritorious. After having arrested the fall of Trisanku from heaven, Sage Viswamitra is stated to have settled at Pushkar to do penance.

An imposing temple of Rama Vaikuntanath of Sri Ramanuja Sampradaya, in typical South Indian style, with the tower and *vimanam*, is at the entrance to Pushkar.

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The River Indus and its Civilisation

N R V PRABHU

Sindhu, one of the great rivers of North-Western India, rises in Tibet in 32° North and 81° East and then flows through Kashmir, the North-West Frontier Province, and Punjab, and after a final course through Sind falls into the Arabian Sea in 23° 58' N and 67° 30' E. The source is to the north of the Kailasa mountain and is near Manasarovar. From this area in the Himalayan mountain start rivers Sindhu, Sutlej and Brahmaputra and also the spring Kauriala. Sindhu not only means river Sindhu or Indus, but Sindhu also means the Ocean. The greatness of the river, its fast and impassable flow of waters and its sudden inundations have led people to actually name it as "Darya" and the river is known by that name in Sindhu, particularly from Bakkur onwards. The drainage basin of the Sindhu is estimated at 372,700 square miles, and its total length at a little over 1,800 miles. The river rises, as stated above, in Tibet behind the great mountain wall of the Himalayas which forms the northern boundary of India, and is said to spring from the north side of the sacred Kailas mountain (22,000 feet), the Elysium of ancient Sanskrit literature. Issuing from the ring of lofty mountains about Lake Manasarovar, it flows north-west for about 160 miles under the name of Singh-kabab until it receives the Ghar river on its south-western bank. A short distance below the Ghar, the Sindhu or Indus, which is supposed to have an elevation of 17,000 feet at its source, enters the south-eastern corner of Kashmir at an elevation of 13,800 feet, flowing slowly over a long flat of alluvium. Following a steady north-by-west course it skirts Leh at a height of 10,500 feet and drops to 8,000 feet in Baltistan, just before it receives the waters of the Shyok river. At Leh it is joined by the Laskar river, and it is crossed by the great trade route into Central Asia via the Karakoram pass.

The name Sindhu or Indus is derived from its Sanskrit original *Sindhu*. In Greek it was called *Sinthos* and in Latin *Sindus*. The word India has reference to the name of Sindhu or Indus. In *Rig Veda* the Sapta Sindhus are referred to. They are rivers Indus, the five rivers of Punjab and the river Saraswati. In the times of the Mahabharata, Jayadratha, son of Vriddhakshatra, was the ruler of the Sindhu country and his wife was Dussala, the daughter of Dhritarashtra. The country of Sindhu is mentioned in the Mahabharata along

with Sauvira. Sindhu or Indus is referred to as *Hoddu* in the Bible too. Still flowing north, through Kashmir, it passes near Skardu in Baltistan, and reaches the Haramosh mountain (24,300 feet) at about 34° 50' N and 74° 30' E. This inequality of slope has been connected with the changes that occurred in the glacial period from the damming of the river by huge glaciers and the formation of great thicknesses of lacustrine deposit.

Shiva saved the earth from one of the great river (Ganga) devastations by tying her torrential flow to the tresses of his hair, his locks were the forests that regulated the course of the river and prevented it from sweeping away the earth. Today, these forests are fast disappearing and the rivers, free from Shiva's restraint, are bringing devastating floods not only in the mountains but also in the plains.

The Indus has been the cause of serious and disastrous floods, the rapid stream dashes down gorges and wild mountain valleys, and in its lower and more level course it is swept by terrific blasts. Even in summer, when it is said to dwindle down to a fordable depth during the night, it may in the course of the day swell into an impassable torrent from the melting of the snows on the adjoining heights. The Indus, on entering the Hazara district of the North-West Frontier Province, 812 miles from its source, is about 100 yards wide in August, navigable by rafts, but of no great depth, and studded with sandbanks and islands. It is fordable in many places during the cold season, but floods or freshes are sudden, even the large and solid ferry-boats which ply upon it are sometimes swept away. The junction of waters during floods is the scene of a wild confusion. The Kabul river is navigable for about 40 miles above the confluence, but a rapid just above it renders the Indus impracticable. The main trunk road to Peshwar also crosses the river by a subway on the railway bridge.

The Indus flows almost due south, forming the western boundary of Punjab, parallel to the Sulaiman Hills. The great north road from Bannu to Sind runs for several hundred miles parallel with its western bank and Sind-Sagar sections of the North-Western Railway run along its eastern bank. The Indus forms the eastern border of the two frontier districts of Dera Ismail Khan in the North West Frontier

Province and Dera Ghazi Khan in Punjab with the Sindh-Sagar Doab on its eastern bank. Between the Indus and the Yamuna flow the five great streams from which the Punjab (Panj-ab literally 'The five waters') takes its name. These are the JHELUM, the CHENAB, the RAVI, the BEAS and the SUTLEJ. The whole course of the Indus through the Punjab is broken by islands and sandbanks, but beautiful scenery is afforded along its banks, which abound with the date, acacia, pomegranate, and other trees. The water, derived from the snows of the Himalayas, is of a dirty brown colour and slightly charged with saline ingredients, carbonate of soda and nitrate of potash. The Indus begins to rise in March, attains its maximum depth and width in August, and subsides in September. The maximum rise registered at Kotri, near Hyderabad, was 22 feet 7 inches.

The delta of the Indus covers an area of about 3,000 square miles, and extends along the coast-line for 125 miles. The climate of the delta is cool and bracing in the winter months, hot in the summer, and during the floods most unhealthy. It is similar to that of the Nile, but dissimilar to that of the Ganges. The marshy portions contain good pasturage, and rice grows luxuriantly wherever cultivation is possible, but the soil generally is not fertile, being a mixture of sand and clay. In the Shahbandar taluka are immense deposits of salt. The Indus formerly flowed down the middle of the THAL. Basira, a village in the centre of the Muzaffargarh Thal, was called Bet Basira and at Shahgarh, a long lake still exists which once formed the Indus bed. At present one of the chief obstructions to navigation is a series of rocks between Tatta and Bhiman-jo-pura. The rapidity and extent of the destructive action in constant progress in the delta may be estimated from the fact that travellers have counted by the reports as many as 13 bank slips in a minute. In some places the elephant-grass (*Typha elephantina*) does good service by driving its roots very deeply (often 9 feet) into the ground and thereby holding it together. Cultivation, therefore, is absolutely dependent upon artificial irrigation. Its main channel is constantly shifting, at only 3 places—Sukkur, Jerruck and Kotri—are the river banks permanent, and during the season of flood the melted snows of the Himalayas come down in an impetuous torrent which no embankment can restrain. The first recorded inundation of the Indus took place in 1833, another occurred in 1841 on a much larger scale. This flood was said to have been caused

by the bursting of a glacier which formed over an accumulation of water in the Nubra Tso, into which there was a regular and steady flow from the surrounding hills. Of recent years the Indus has been embanked from Kashmir to the mouth of the Begari Canal, a distance of more than 50 miles. The embankment has proved a great protection to the N-W Railway, which here runs at right angles to the river. The waters of the river are first utilised on a large scale in the INDUS INUNDATION CANALS, which water a narrow strip between the Indus and the Sulaiman mountains. In Sindh the following are the chief canal systems, on the right or west bank, the Desert, Unarwah, Begari, Sukkur, Ghar and Western Nara, on the left or east, the Nara supply channel, Mahi Wab, Jam-Rao, a branch of the Eastern Nara and the Eastern Nara with many distributaries, the principal being the Mithrao and Pnjari. Other important canals are the Fuleli with 2 months, the Nasrat and the Dad. As a channel of navigation, the Indus has disappointed the expectations that were at one time formed. But, even as with most other Indian rivers, the cheapness of water communication cannot compete with the superior speed and certainty of railways. The general character of the Indus trade may be inferred from the statistics of imports and exports into the Punjab by 'river and rail', which refer only to traffic borne in part or wholly on the Indus. The boats of the Indus are the *Dundo* and *Saurak*, both cargo boats, the *Kauntal* or ferry-boats and the *Dundi* or fishing-boats. The cargo boats are sometimes of 60 tons burden, and when laden draw 4 feet of water.

The modern village of Harappa is situated on the ancient bed of the Ravi—a tributary of the Indus, has partly encroached on the ruins of the ancient city which lie nearly 25 kms west-southwest of the district town of Montgomery in Pakistan—Punjab. Excavations at Harappa and Mohenjo-Daro and subsequently at numerous other places have brought to light the well-developed and flourishing Indus Valley Civilisation which existed for at least more than 1,000 years. In 1922 A.D., Dr R.D. Banerjee found remains under a Buddha stupa at Mohenjo-Daro. It was a highly developed urban civilisation, and it was very widely spread. Between Rupar at the foot of the Simla hills and Suka-gendor near the Arabian Sea, more than 60 sites have been found to have remains of this culture. Mohenjo-Daro is in the Larkhana district of Sindh. The Indus Valley Civilisation is roughly dated between 2500 and 1500 B.C.

It is estimated that the rainfall in the Indus Valley was more ample in the third millennium B C than it is today, and there was a great measure of stability for the inhabitants of this area 3000 to 4000 years ago. The citadel, the granaries, the gateways and the terraces, the cemeteries, the college, the assembly hall, the bath, the fortifications, etc., give the idea of the complex civilisation then prevailing. About 80 miles from Mohenjo-Daro has been found out the ancient site of Chanhudaro. At Harappa, 57 graves have been found. The bodies lie from north to south in graves which can also contain 15 to 20 pots. The dead have ornaments, shell bangles, necklaces, copper finger-rings, ear-rings, objects of toilet by their side, etc. But it is believed that burials may belong to a later period and the Indus valley people disposed of their dead by cremation, as is proved by cemetery urns, burnt human bones and ashes. This Indus Valley Civilisation had progressed both in the matter of agriculture and trade. Implements of war also have been identified. Many scholars believe that it is parent of the Brahmi script of early India. All the same no successful efforts have so far been made to decipher the script. So far as the religion of the Indus valley is concerned, the worship of Mother Goddess appears to be prominent, so also the worship of a Male Deity similar to Pasupati or Siva. Some scholars even suggest that the Indus Valley Civilisation was part or an off-shoot of the Vedic culture, which was approximately dated to 15th century B C. Some others say that the Indus Valley Culture represents the non-Aryan culture described in the *Rig Veda*.

People of the Indus valley seem to have traded very widely. They traded with places including Kashmir, Nilgiri Hills, Central Asia, South India, Mysore, Afghanistan, etc. To sum up the achievements of the Indus Civilisation and its contribution to the progress of mankind, it is necessary to know how far the Harappans were indebted to their ancestors and contemporaries for the ideas which were given a concrete shape in the Indus Valley. While admitting the fact that there was no intellectual borrowing between the Indus and Sumerian civilisations it is at times suggested that the former originated outside the Indian sub-continent. But merely because the Harappan culture presents itself in a mature form at Harappa and Mohenjo-Daro it need not be presumed that its roots lay elsewhere. True within the Indus

Valley itself the Pre-Harappan culture encountered at Kot-Diji does not appear to have contributed the main elements of the Indus Valley Civilisation namely town planning and the knowledge of writing. The problem of the origin of the Indus Civilisation cannot be solved until fairly large areas of the earliest levels of Mohenjo-Daro and Lothal are excavated. In civic administration the Indus cities were more advanced than their Sumerian counterparts. Human activity started at Lothal around 2,440 B C if not earlier and lasted up to 1,600 B C. During this period a small village that Lothal was developed into a large port-city of the Indus Empire, and witnessed a great many changes in its political and social life. Lothal is subject to frequent floods when the rivers overflow their banks.

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KERALA AND ITS RIVERS



Kerala—Its name

Kerala in the southern region of India is famous for its breath-taking beauty. The *Aitareya Aranyaka* seems to be the earliest Sanskrit work which specifically mentions Kerala. Perhaps Kerala is derived from *Kera*, the Sanskrit name for Coconut as this part of India abounds in coconut palms. Some hold that Kerala takes its name from 'Cheraman Keralan', a renowned King who ruled it. The *Brahmandapurana* gives an account of how Parasurama retrieved the land which stretches from Gokarna to Cape Comorin from the sea which had engulfed it and bequeathed it to the displaced inhabitants and the region is famous as Parasuramakshetra also. Al-Beruni (A.D. 970-1039) seems to have been the first to call the country Malabar which is an Arabic corruption from Mala (vernacular)—mountain and Vara (Sanskrit)—slope. Dr. Robertson, in his 'Historical Disquisition concerning Ancient India' derives it from 'Mall', the name of a port mentioned by *Kosmos Indikopleustes* and says it means 'country of pepper'. According to St. Bartholomew the country was named Malanadu.

Kerala—Its Boundary

Kerala is one of the smallest States in the Indian Union. This territory includes the States of Travancore and Cochin and the Malabar—district and the Kasargode taluk of the old Madras State. Kerala is picturesque being enclosed between the Arabian sea and the Western Ghats and Karnataka and Tamil Nadu forming the other boundaries. Kerala could be described as the favourite child of nature as it is blessed with a large number of rivers and

rivulets and a few lakes and estuaries. The extensive backwaters and lagoons are a unique feature of Kerala.

Kerala's Rivers

There are about 44 important rivers in Kerala out of which 41 flow westward and 3 which are tributaries of Kaveri flow eastward. The close proximity of the Western Ghats to the sea coast naturally affects the length of the rivers. Only four rivers are more than 100 miles in length. The longest is Bharatappuzha (156 miles) and the other three are Periyar (142 miles), Pamba (110 miles) and Caliyar (105 miles). The others are on an average 40 miles in length. Most of the rivers rise at a height of 90 to 1200 m above sea level and fall within a distance of 30 kms to a level of about 150 m. The rivers thus provide vast scope for hydroelectric generation and irrigation.

The Kerala rivers generally take their name from the places they flow past and since the rivers course through different localities, one and the same river gets two or three names also. For example, the Bharatappuzha is called Ponnani river and Nilai in Sanskrit. The Periyar river which is the finest and most important river of the erstwhile Travancore State takes its rise from the Shivagiri hills and it is famous as Mahanadi, Curni and Alwaye river also. The stream Pamba which starts from the hills to the north of Pulicchimala when joined by the Arutha river comes to be called the Valiya Aar and this is joined by the Kakkada and the Kallar above Ranni and thereafter the combined river is called the Ranni and it is about 90 miles in length. The other famous rivers in the Travancore region are the Kollakkadavu, Muvathupuzha (formed by the union of three smaller rivers—the Todupuzha, the Vadakkan and the Kothamangalam), Meenachil, Neyyar, Manimala, Achankoil or Kulakkada, Aaltungal or Vamanapuram, Ittikara, Karamana, Kuzhittura or Paralayar. Among the chief rivers of the Cochin region mention may be made of the Alwaye (already noted) whose waters are believed to have medicinal qualities and are reported to remove the ill-effects of biliousness, prickly heat and boils and even elephantiasis. The Chalakkudi river rises from the ghats beyond the Kodasserı forests and flows through wild and mountainous country as far as Kanjurapalli 50 miles away. Thereafter it courses through picturesque and fertile banks for about 20 miles and empties itself into the right arm of the Alwaye about 6 miles east of Cranganur at Elantikara. This river is formed by the junction of the Parambikolam river with

the Kuriyar or Nelliampati river near Kuriya Kuttu and with the Sholayar near Orukombankutti. The water of the Chalakkudi is not as clear and light as that of the Alwaye. The Karuvannur river about 40 miles in length is formed by the junction of the Manali and Kurumalai rivers which quite often dry up during the hot season. The Ponnani or Bharatappuzha is the largest river on the Malabar coast and receives numerous streams rising from the Cochin forests. One of its tributaries is the Cherkuzhi or Padur river in Pazhayannur, which is the continuation of a stream coming down from the Tenmalai range through Nemmara and the Palghat taluk and joins the Ponnani at Kuttampalli near Tiruvilvamala. The Ponnani river is useful as a convenient outlet for the timber extracted from the Pottundi and Machad forests. The Chittur river and the minor streams that pass through the Chittur taluk, namely, the Korayar, the Varattar and the Velanthavalam join the Ponnani. In the British Malabar regions in addition to the Ponnani river we have the Valarpatnampuzha which starts from the hills on the north-west corner of Vayanad and has a course of 70 miles before it discharges its waters into the sea and the backwaters. The Kottapuzha near Kurumbranad has a length of 46 miles only but it is noted for its perennial waters. Through the channel which connects this with Badagara and through the Payyolittodu and Kanolittodu this is joined with Akalapuzha, Elatturpuzha, Kallayippuzha and Beppurpuzha and thereby provides facility for navigation up to Kozhikodu. The Beppurpuzha is famous for the gold in its sands.

Backwaters

Among the many natural advantages possessed by Kerala, the most important one that adds materially to its wealth and prosperity by affording great facility for water communication from one end of the country to the other is its extensive backwater system. The backwaters or *Kayals* as they are locally called, are inlets from the sea which run in a direction parallel to the coast. Many of these backwaters are not deep, yet they are navigable for boats of any size. On account of the large volume of water, these backwaters receive during the monsoon time, their water, except in the immediate vicinity of their mouths is quite fresh for an appreciable part of the year. The places where these backwaters meet the sea are called *Azhis* or *Pozhis* according as the opening is permanent or temporary. For instance, we have *Azhis* at Quilon and Kayamkulam and

Pozhis at Veli and Edawa. The *Kayals* at Veli, Kathunamkulam, Anchutengu, Itavam, Paravur, Asthamudi, Kayamkulam, Vembanad and Kodungallur are the most famous ones. Artificial canals connect these backwaters so that from Trivandrum in the south to Badagara in the north there is a 450 kms uninterrupted system of inland water communication. The Vembanad lake stretching from Alleppey to Cochin forms the biggest water basin spread over an area of 20,224 hectares. There are about 2,000 kms of navigable waterways in Kerala and this forms more than 20% of India's total length of waterways. The Sasthamkott Kayal in Quilon is a notable good water Kayal. The Asthamudi Kayal is enchanting and romantic in its setting and its name is derived from the fact that the lake branches off into eight creeks called by different names.

Trade Contacts

Classical writers like Pleny, Ptolemy and the author of the Periplus gave detailed accounts of the ancient Kerala ports which are now almost forgotten. The most important of these was Muziris (modern Cranganore). The Kerala port of Quilon was known to Marco Polo (13th cent). Calicut was famous by the time Vasco-da-Gama landed here (15th cent) and Cochin, the most important natural harbour rose into prominence only after the Periyar floods in 1341 A.D. and the consequent decline of Muziris. These ports encouraged the foreign seafarers to establish trade contacts with Kerala even in the early B.Cs.

Wealth from the Waters

The long coast line and the large number of backwaters and fresh water streams provide Kerala with an inexhaustible stock of aquatic wealth. Among the chief marine products, shark liver oil, turtle oil, frozen shrimps, frog-legs, processed prawn and weeds of nutritional value are worth mentioning.

Aquatics: *Vallamkali* or boat regatta is a typical Kerala festival. Here the crew row up and down the river to the tune of traditional boat songs in a religious spirit as in the case of the famous Aranmula *Vallamkali*. At times it would be done in a healthy competitive spirit as in the case of the Champakulam boat regatta or the Punnamada Kayal *Vallamkali* commemorating the visit of Pandit Jawaharlal Nehru, as the Prime Minister, to Alleppey. Normally

these competitions are held during the Onam season (August-September)

Rivers—Their Perennial Value

In the historical and cultural context, the rivers of Kerala had a significant place as the historically and culturally important places are on the banks of these. For example, Vaikom, famous for the Siva temple to which thousands of pilgrims flock in the months of *Vrischikam* and *Kumbham* for the Ashtami festival, is on the eastern bank of the Vembanad Kayal, midway between Alleppey and Cochin, Tirunavai, where the zamorin of Calicut used to hold the Mamanka till the close of the 18th century is on the banks of Bharatappuzha and Kaladi, on the banks of the Periyar, is the birth-place of Adi Sankara

The water resources of Kerala are systematically harnessed for power generation and irrigation. The dams in the region which have to be cherished in one's memory are the Neyyar, Malampuzha, Gayatri, Mangalam Peechi, Chalakkudi and Vazhani. In the field of power generation Kerala has progressed substantially in the Pallivasal, Neriamangalam, Kuttriyadi,

Perungalkuttu, Idukki and such other projects, thus contributing its share in the building of a better India

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TAMRAPARNI

Tamraparni or Tamiravarani or Tamravarni, derives its etymological meaning from its possession of copper-coloured sand on its banks (*Tamra*=copper, *Varna*=colour) It has a few other names such as Tamravari and Porunai, the latter one being frequently mentioned in Tamil Literature

The river rises on the slopes of the peaks of the Western Ghats, viz, Agastyamalai and after a course of some miles descends to the plains in five beautiful falls at Papanasam, a very sacred spot It covers the Tirunelveli district in toto and the credit of the agricultural prosperity of the district goes to Tamraparni alone

The Tributaries

The river Tamraparni has three tributaries, viz (1) Manimutharu, (2) Kayatharu and (3) Cittaru It covers a distance of 112 kms before joining the Bay of Bengal at the Gulf of Mannar

When we come to the literary sources to find about the religious greatness of this river, two major works and one minor lyric attract our attention

The *Tamraparni Mahatmya*, which has not seen the light of the printers' desk mentions about 149 sacred waters (*tirthas*) on its route The *Tirunelvelittalapuranam*, devotes 50 verses to explain explicitly the religious significance of the river The *Tamraparnistava* of Tyagarajam describes in eight slokas the greatness of the river The *Kantimatsalivatsavarastuti*, mentions about the river Tamraparni, which crosses Tirunelveli, the abode of Goddess Kantimati

There are nine *Vamavattiruppadigal* (the sacred Vaishnavite temples) among the 108 on and near the banks of the river Tamraparni They are enlisted below

1 *Tirukkuruhr* (modern Alwartirunagari, twenty miles east of Tirunelveli) Brahma and Nammalvar worshipped here There is a sacred Tamarind tree, under which Nammalvar sat for fifteen years in meditation and got enlightened Madhurakavi Alvar came to his abode at the end of the fifteenth year and after that only Nammalvar started composing verses in praise of

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Lord Narayana, which were set to music immediately by Madhurakavi Alvar

- 2 *Rettaitruppati*, otherwise known as Tolaivillimangalam is situated close to Tirukkuruhr There are two separate shrines for Lord Vishnu where Vayu the wind-god, worshipped the Lord
- 3 *Srivaramangai* which is called nowadays by the name Nanguneri, called otherwise as Vanamamalai or Todadri This is placed 20 miles south of Tirunelveli The Tenkalai Vaishnavite sect *Jeer* (the head of the Mutt) lives here This mutt is also called as Todadri Mutt
- 4 *Tirukkurungudi* is situated south of Tirunelveli town The deity here, is called variously like Tirumal Nambi, Malaimal Nambi, Nimranambi, Irunda Nambi, Kidanda Nambi and Tirupparkadal Nambi The Goddess is Kurungudivalli The Tirtha has the name Tirupparkadalaru Periyalvar, Tirumazhisai Alvar, Tirumangai Alvar and Nammalvar have praised this holy place in their compositions
- 5 *Varagunamangai* is situated north of Tirunelveli The presiding deity is named Vijaya-sara and the Goddess, Varagunavalli The tirthas are Devapushkarani and Agnitirtha This sacred place had been worshipped by Nammalvar
- 6 *Tirupperai* is situated two miles south of Tolaivillimangalam Sukra and Esana, Gods of the North-East, worshipped the Lord here
- 7 *Tiruppulingudi* which is very near to Tirukkuruhr is, practically on the banks of the river Tamraparni The guardian deity of South-West, Niruti, worshipped Lord Ranganatha, the presiding Arca form of Lord Vishnu, here King Tondaman frequented this temple and was blessed by the Lord
- 8 *Srivarkuntam* is situated 3 miles west of Tirukkuruhr Lord Indra did penance here There is a sculpture of Sri Rama embracing

Hanuman in a Mandapa This Kshetra is situated on the Tamraparni river

- 9 *Tirukkolor* is one among the 108 *Dvya-kshetras* of Vaishnavite order where Kubera the Lord of Wealth was blessed by the presiding Lord Madurakavi Alvar has sung on this holy place Situated close to Tirukkuruhr, this *kshetra* is on the banks of the river Tamraparni

References in Literature

The *Tirunelvelittalapuranam* of Nelliayappa Pillai has a separate chapter named *Tamraparni-charukkam*. A few verses, which are interesting are given below

- (1) *Pangiru karaiyenganum pannavarsalai*
Tengukarai suzh sennan siranda valayanga
Longu mayanarkkanapatyuram peruveyon
Punguzhitrutkai koyilum pugazhudan porundum

(The banks of the river Tamraparni abound in the hermitages of sages and great temples of Lord Vishnu, Ganapati and Siva)

- (2) *Vaitta palluyirtogaiyelamagizha niradip*
Putta neyattara mamudamum pumdamayutti
Noittuyarilladalittalanuvalarum perumait
Taittagavvoru sirandadu tanpunarporunai

[It makes all the beings take bath and partake the holy ambrosia, it dispels the diseases in the subjects, such is the greatness of river Porunai (Tamraparni)]

- (3) *Tirundu tambira malayattir cirandinudezhundu*
Nirandu suzhundu panguzhodu nirabalam
porundu
Marangalun dazhaittita varungalana maruvic
Churanda nircceri porunayn perumaiyar solvar

(Who can express the greatness of the river Porunai which rises from the mountam of Tambra, strengthened fully by its tributaries which contribute to the forests and cross the hurdles on the way)

- (4) *Seyya velvagalayatuvar siranda vediyarkan*
Meyymmaya manunadiye nadattuvar vendar
Vaiyam potra nal valangalayudavuvavar vanagar
Poyyil sutthirar tazhaittidum porunayandiram

(On the banks of the river Tamraparni (Porunai) the Vedic scholars shall perform sacrifices, the king shall rule over the country with the truthful Manu's code, the merchants being praised by the whole of the world produce prosperity and the working class dwell there without giving way to falsehood.)

- (5) *Inna tambirapanniyar yettalattirundu*
Mannu sindayinnaiappavar varugangai mudalai
Tunnu tirtangaladidinnait tiruntuyor
Munnayuzhuvmai ningiye muttiyadaravar

(Those who think of this river from any holy place, will attain the liberation, having been released from the demerits committed in the previous birth, resulted from the merits of taking bath in the Ganges and other holy rivers)

- (6) *Maladigal ketkulin mandaraip peruvar kanni*
Nalamuru madavaar ketkinalla naayakanar
chervaar
Calamigu noyaar ketkin saarndidu noykadirvaar
Ralagil paadagargal ketkilarum pavamanait-
tundirvaar

[(When this Tamraparni is worshipped), the barren women will beget children and virgins obtain good husbands, when the diseased ask for, they will get released of their pains and even wicked persons will be dissociated with their sins]

From the above passages, the nature of the society that existed on the banks of the river, is visible. The religious sanctity is also brought out

The *Tamraparnistava* of Tyagarajamakhin explains the puranic significance of the river and the abounding kshetras

In eight beautiful *slokas* he brings out its religious sanctity 'The merit obtained by bathing in Ganges could be easily got by bathing in Tamraparni', says the poet

In *Kantimatisaahvaatisvarastuti*, a short lyric poetry praising the Goddess Kantimati and Saahvatisvara, the presiding deities of the Tirunelveli Kantimati temple, there is frequent reference to the river Tamraparni

There is a reference to a legend, where Tamraparni is said to have performed penance to attain the blessings of Lord Siva. It also mentions the story of Agastya leading the river Tamraparni to the ocean in 27 days from its source

Conclusion

Though there is much to be told on this river, this article covers only the fragments of its religious significance. Each *sthalapurana*, of the temples on the banks of this river does not hesitate to incorporate its greatness with the sanctity of the river



CAUVERY IN TAMIL LITERATURE—GLEANINGS

The Cauvery is considered to be the best of the rivers that drain the Southern peninsula of Bharatha Varsha. It takes its source on the Western Ghats, near Coorg and flows through Mysore, Coimbatore, Salem, Trichy and Tanjore districts, covering a distance of about 480 miles, draining an area of 28,000 sq miles in toto. The origin of this river is legendary and various mythological stories are attributed for its divine origin. It is said in the *Manimekalai*, one of the *Pancha Kavyas* of Tamil Literature, that it derived its name from "Kaverakkanni" a daughter of "Kavera", a great Yogi and a Raja Rishi. Another story is that Vinayaka in the form of a crow turned into turtle the "Kamandalu" of Agastya, who was bringing the Ganges-water from the North, on his journey to the South to the Podhiyal Hill, and the water that trickled from the "Kamandalu", flooded the garden of Indra, who was doing penance there. Thus, "Kakaviri" (*Kakam* (Tamil)—crow, *viri* (Tamil)—expanded) was corrupted to form the word "Kaviri" and as it flooded the "Kaa" (*Kaa* in Tamil means a garden) of Indra, and then expanded, it is called "Kaviri". There is also another reference in the same book *Manimekalai*, the waters that flooded from Agastya's "Kamandalu", acceding to the request of "Kandhaman", a Chola King, who prayed for water to remove the sufferings of his subjects from a famine that devastated his country. But, it seems that Kaveri is the correct word, as evidenced by Ilango Adigal's usage in his immortal book *Silappadhikaram* as "Pulavoy Vazhi Kaveri", "Nadanthai Vazhi Kaveri".

Leaving these interpretations apart, the Cauvery is, no doubt, a prominent river noted for its sanctity. It is referred to, as possessing the sanctity of the Ganges. Various testimonies can be given from ancient Tamil Literature, that people used to bathe in the waters of the Cauvery to wash off their sins and it is stated in the *Silappadhikaram* that the holy waters from its confluence have been brought in golden pots for 'Abhishekam' (pouring the holy waters on the idol) to Indra, during the concluding ceremony on the twenty-eighth day of Indra's festival. Lovers and married couples used to

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take their bath in the river, and the story of Attan Aththi (the dancer named Aththi) is well-known to everyone. The dancer Aththi had been washed away by the swift current up to the very confluence with the sea. About the confluence, it is very interesting to note the geographical idea that in the flood-season, the waters of the Cauvery will flow with force to join the sea, and in turn the waters of the sea will reciprocate flowing through the mouth of the river, and it is beautifully mentioned in *Akananuru* (stanza 123) wherein we find, that the waters of the sea flow through the river-mouth bringing fish along with them and in turn take back the garlands, strewn on the banks of the river. These garlands are left by the people who enjoyed the bath at the confluence, on the beach. This sort of inflow or water from the river into the sea and the penetration of sea-water into the river-mouth in turn, has been described in the *Silappadhikaram* and *Malai-padukadam* also. It is interesting to note that the floods in the mouth used to immerse the oars of the boats that ply in the region.

The floods flow with a mighty force that after taking bath in the waters the body shivers with the chillness of the atmosphere prevalent there at that time. Further, these floods erode the shores on the beach, leaving a long trail of black soil on the surface of the beach (*Aham* stanza 213) also says about this trail of black soil left by the waves. The banks of the rivers are studded with gardens and plantations of mango trees. There is a beautiful reference for the existence of small anicuts that are barring the waters of the Cauvery. Thus it is clear that the entire region in South India, drained by the Cauvery has been irrigated by its waters, making the region fertile, to yield rich harvests of paddy, sugar-cane, etc. There is an evidence in *Porunarruppadai Venba* which says that the grains of paddy that are strewn on the threshing floor in Chola Nadu during Karikala's regime, will be equal in quantity to all the produce in toto gathered in both the kingdoms of the Pandya and the Chera. That

As why this river is called 'Ponni' because, it is responsible for yielding 'pon' which means paddy

Other scholars used to say that grains of gold are found in the soil of the Cauvery and hence it is called "Ponni". The farmers are termed in Tamil Literature as 'Kavirippudhalvar' (sons of the Cauvery) because they are responsible for the production of grains in that region

Settlements

On the banks of the Cauvery, we find lots of settlements established and I can give a few examples, which may be of interest to the reader. There is a reference to a place known as "Por" which belongs to a tributary chieftain named 'Pazhayan'. Then 'Kazhaar' is a place mentioned to be situated at the confluence of the river and it is famous in Tamil Literature for its fields and gardens. There is a reference to "Avoor" in Puram (Stanza-26), which says that the place owes its fertility to the Cauvery. This Avoor according to Tanjore inscriptions is said to be in the division of "Nittha Vmodha Valanadu".

Of course, mention is made of Uraiyur, the capital of the Cholas, and there is a beautiful reference to the river depositing the white sands to form dunes near the city, which later on became suitable for the growth of gardens with sweet-smelling flowers and dense foliage. There is also a town known as 'Ambar' which belonged to a chieftain named 'Aruvandah' and the place is identified with a similar place-name standing on the Arisilar, a branch of the Cauvery. The Divakaram also refers to Ambar and the Cauvery.

Karikala has been immortalised as the king who has constructed the bund for the Cauvery, all the way from 'Puhar' (Kavirippumpattinam) to Srirangam up-stream and it is evident from the inscription at 'Neyththanam' that he employed 12,000 Sinhalese slaves, whom he

captured during his military expedition to Ceylon for this construction besides the local chieftains under him. Hence he is called 'Valavan' and his successors are called 'Valavar' or 'Kaviri-Nadar'. Because of this construction, the waters of the Cauvery are said to be responsible for the fertility of the Chola country. Much can be said about the Cauvery from Tamil Literature, but I had confined myself to a few references.

The "Pattmappalai" is replete with facts about "the never-failing" Cauvery and the important port situated at its confluence, Puhar.

Leaving these apart, Periplus, Ptolemy, and other ancient geographers have made mention of this river with great admiration. In the book *The Questions of King Milinda* written in Pali, the city of Puhar is referred to as "Kolappattana" (perhaps a corruption of 'Cholappattinam'). Buddhadata of the 5th century A.D. in his book *Abhidhammavattaras*, written in Pali, refers to the trade in Puhar, the buildings, parks and other eminences there.

In short, the Cauvery has entered into the very soul of the Tamilians. Its sanctity is evident from the *Kavirith-thala-puranam* and it is said that a boar, a frog and a crocodile attained eternal bliss after taking a bath in the river. More than that, it is stated that Arjuna, Harischandra and Suseela attained *Moksha* by bathing in this river. Copious quotations can be given about the greatness of the Cauvery. Its mellifluous flow is compared to the gait of a lady in *Kalngatthupparam*.

I will conclude with this prayer that the waters of the Cauvery may be even brought for drinking purposes to the city of Madras, to alleviate the water scarcity of this metropolitan city, which has a teeming population of more than two millions. Let this prayer come to fruition by the blessing of Mother Kaveri (Kavery Amman).



THE CAUVERY

The Cauvery is one of the six important rivers (Mahanadi, Godavari, Krishna, Cauvery, Narmada and Tapti) of South India. It flows from Karnataka and Tamil Nadu springing from a spot lying on Brahmagiri Mountain at a height of 1,320 metres from sea-level. The range of mountains, a part of Western Ghats fall in the area of Coorg, a charming mountainous area indeed. The people inhabiting the area of Coorg are strong, fearless and fighters like the Rajputs.

Annual Festivals

Just as other important rivers have festivals connected with them and the birth of a river is celebrated with eclat, similarly, the birth of Cauvery abounds in festivities of the occasion. People undertake a journey to Brahmagiri mountain every year on a particular day of *Sankranti* to see how the Cauvery sprouts forth from a tiny tank. In olden times, when the road ended five miles before Sante, people flocked in thousands every year in October to observe the birth of the river irrespective of the fact that ferocious animals surrounded the area and it was not safe to pass through the infested area. They walked through short-cuts to reach the spring, the chief attraction of the site.

A rock named "Vandana Shila", greets the visitor, while climbing the mountain. There is a story told by the people that Tippu Sultan, the ruler of Mysore in the 18th century was returning there after an attack on Coorg. He stopped to rest on this mountain. He saw the charming sight of the peak of the mountain and was much enchanted to see the springing water from the peak that he saluted the spot with a bowed head. Since then, "Vandana Shila", came to be revered all the more with the present holy name. When the water falls in the small tank, the people become mad with joy, singing and clapping. The larger tank nearby, gathers the water, spared by the smaller tank. The visitors feel an inner pleasure to be blessed with a bath in the tank. Nobody takes bath in the smaller tank. Instead, after bathing (taking a dip in the water three times), they proceed to the smaller tank, sprinkling water upon themselves with their hands. There is a custom amongst the people to carry water to their homes in bamboo tubes. Just as Hindus going to Haridwar fill up the water of the Ganges for their homes, similarly, it is considered auspicious to fetch the water of this tank. Like

the water of the Ganges—flowing fast, it does not get spoiled and is fresh for a long time.

The people of the area love to name their daughters after the river Cauvery and it is a fact that right from the olden times, the name of Cauvery has been more popular than any other name in Karnataka and Tamil Nadu.

Origin from Mythology

Just as a number of our holy places are connected with sages and savants of bygone days, similarly our rivers are connected with them in one way or the other. There is a story about the birth of Agasthya Rishi and Cauvery. Cauvery was bestowed upon King Cauveru as a gift by Lord Brahma. When Cauvery came of age, Sage Agasthya was fascinated by her beauty. He wished to marry her. King Cauveru loved Cauvery dearly and so he hesitated to part with her company. After persuasion he agreed to give her on the condition that the Sage would never leave her alone. He promised to look after her every moment providing her every comfort under every circumstance. Thus married on this condition, the couple began to lead a conjugal life in the Ashram. The Sage kept his word for a sufficiently long period. However, a day came when he forgot her, being busy with solving a philosophical problem of his students. He could not return to the Ashram at the usual hour. Naturally, his dear wife was perplexed. Her wait was too much, specially, when the Sage had given her the most precious time since their marriage took place. She thought the Sage was through some terrible trouble. She was too infatuated to be alive without him. She decided to commit suicide. She lost no time in plunging herself into the tank used by her husband for a bath daily. Fortunately, she did not die. At the same time, she did not come on the surface to be visible to the naked eye. She turned into a river and sprang forth from a peak on the Brahmagiri mountain.

At the same time, Sage Agasthya was wandering hither and thither in her search, sad and helpless. At last, he reached the spot where she sprang forth like a spring. He at once recognised her and implored her to return home. She refused to do so. However, the Sage was able to bring her round. She told him that her one half would live with him as his wife while the other half would serve Mother Earth as Cauvery River. It is said that she made a promise with

the people of Coorg to give them her *darshan* every year in the form of a spring. It is believed that she has all along been fulfilling her solemn promise by giving them *darshan* every year. The people experience genuine pleasure and pride visiting the spot with a spiritual outlook born of mythological conception. The perennial flow survives and so do survive the yearly traditions.

Its Flow

Rivers do not have the same flow from the source to the end. Their ways are ever changing with time and space. They make things for themselves irrespective of considerations of Man who is a tiny speck for them. The 765 kilometres long Cauvery has her name *Meka Dattu* or *Addu Thundam*. Cauvery, before she enters Tamil Nadu, meaning thereby, that even a goat can cross it in a single leap. Her flow is constant, playful, gorgeous and gurgling. She moves slowly and steadily and at Shivasamudram, she roars, rolling down. At Srirangam, she is holy like a *Sadhvi* and at Shrirangapatnam she affords shelter to the birds which love to lie in her lap. They find motherly comfort in her company and are totally at peace. Like other rivers of Bharat Mata, the young and the old fully know her vagaries, the rising and fall of her waters. While the children play with immense joy with her waters at some places, the same turbulent waters play havoc with the people at other places, running life and property, especially the crops grown with the toil of day and night.

Flowing from Brahmagiri Mountain reaching the plains, two small rivers Kanka and Gajoti mingle into it. Bhagamandalam is situated on the conflux of these two rivers like Allahabad in Northern India which is situated at the confluence of the Ganges, the Yamuna and the Sarasvati. After flowing through Coorg, the Cauvery gains in strength and depth when Hemavati and Lakshmantirth rivers join it. Before their joining, it is a small river.

The Dams

And here start dams. The oldest dam on the Cauvery was built as far back as 1,600 years ago or perhaps even more. On both sides of the river are found walls spreading to a distance of 160 kilometres. It is told that King Karikal of the Chola Dynasty built the walls. He ruled over the Chola dynasty over the area in the first century and used stone anicuts. The dam stood the vagaries of nature for hundreds of years. The earth and stone used in its con-

struction were superb and surprises even the modern engineers. The 19th century saw its rebuild on a bigger scale and size. The name has since been changed to 'Grand Anicut' and is of paramount significance to Tamil Nadu. It fulfils the needs of the farmer in abundant measure. The summers also do not go dry as before. The floods have been checked through a laudable labour of skill.

Usually, when people are tormented with ravaging floods, they not only check them through dams but also by propitiating the god of water, Varuna. They light hundreds of lamps made of flour, praying for prosperity. The festivals of flood are held in northern and southern India with matching eclat. "The Flood of Eighteen Stairs" Festival is well-known in Tamil Nadu. When the water rises above the eighteen stairs, it is a sign of annual floods. People throng in thousands with lamps in hands praying for the retreat of the floods. Sweetmeats, fruits and flowers are consigned to the waters. The visitors have a picnic and the occasion is observed with sobriety as well.

The Kannambadi Dam is the first and the biggest dam built on the Cauvery at Mysore. In Tamil Nadu also, there are other dams besides the Grand Anicut, upper Anicut and lower Anicut. The lower Anicut is built on Kolrun, a branch of the Cauvery and like a separate river. The Mettur Dam joins the Sita and Pala mountains beyond that valley through which the Cauvery flows, up to the Grand Anicut. It was built 20 years before Independence. There are big and small waterfalls on the way of Cauvery. Shivasamudram is a pleasant sight where the fall is 90 metres from the level of earth, actually, a lake, where it falls. The white colour of the water provides scenic beauty to the visitors accompanied with rainbow like colours.

Hokenagal waterfalls lies in Tamil Nadu. The falling water seems to emit smoke. This water fall is nearer to the Mettur Dam. Electricity generation takes place over here. The Cauvery forms two parts (Shiva Samudram is a waterfall there)—Gagan Chukki and Bhar Chukki form it. The electricity produced over here is used for the Kolar gold mines, the Steel Plant of Bhadravati and for a number of factories. Whereas, Hokenagal is a waterfall for scenic beauty. The Mettur water reservoir is used for irrigation purposes through canals flowing from Krishnaraj Sagar. The other part known as Shivasamudram produces electricity.

Dr. Vishweswarayya

It would not be out of place here to mention a story about the person who was chiefly instrumental in building the Kannambadi Dam at Mysore on the Cauvery. While teaching a lesson on health and its importance, a teacher ridiculed a handsome, lean, large-eyed pupil about his health. The teacher had fears the pupil would not live for more than 30 years if his physique did not improve. The pupil was none else than Vishweshwarayya (later known as Sir M. Vishweshwaraayya). He lived up to 100 years and was honoured with Bharat Ratna for his engineering skills. He founded the Mysore University and Mysore Bank. He set up the Bhadravati Steel Plant and other industries.

Sir M. Vishweswarayya drew a map of Kannambadi Dam (where Hemavati and Lakshman Tirath rivers meet with the Cauvery). The water of the three rivers was stored in a lake (like the Sutlej river waters in the Gobind Sagar lake—the site of Bhakra Nangal Dam in Punjab), lying on the bank of the 40 metres high and 2,600 metres long dam. The area of water from the surface of earth level, is 128 square kilometres. It took 12 years to construct the dam started in 1911. The name of Jalsagar follows the name of the Maharaja of Mysore, Krishnaraja Sagar.

Other Rivers in its Fold

Sometimes, the Cauvery takes into its fold other rivers and sometimes it divides itself. It divides itself three times. The two branches mingle again after flowing separately. When they meet again, the earth enclosed in between like an island, shows forth. The first island falls in Mysore State when the river divides itself into two separate branches. The branches meet and in-between is formed an island on which is situated Srirangapatnam, a famous city. For sometime, it was the capital of Mysore Kings. A battle was fought between the English and Tipu Sultan, the historical warrior. Unfortunately, Tipu Sultan died in the battle. At a distance of a few kilometres, there is a bird sanctuary known as 'Abhay Van', people come from India and abroad to see it.

Leaving Srirangapatnam, small rivulets join the Cauvery. It becomes broad and powerful. It forms two branches, approaching the plateau type of earth, falling in the name of Shivasamudram waterfalls from the mountain. Before this, a distance of 5 kilometres is covered separately by the two branches. Shivasamudram, the second island being formed during the course of this flow. Jungles surround the area covered by Shivasamudram. Animals infest

the area. The third island is formed in Tamil Nadu. Kolrun—a branch of the Cauvery after flowing for 43 kms when meeting the main river, forms it. Srirangam, a tirtha lies there.

Contribution of Cauvery

There are numerous temples and holy places on its banks. People perform pujas daily singing hymns in praise of this river.

Besides this, the economic condition of the people, has greatly improved, since the construction of dams, etc. Plains spreading over thousands of miles have green fields of sugar-cane, etc. The rural areas of Mysore changed with it. Tanjore district in Tamil Nadu is the rice bowl of the South just as district Kurukshetra is the rice bowl of Haryana State. It is said with pride that every iota of the earth of Tanjore is equal to an iota of gold.

Important cities celebrate festivals. The rural people flock together to melas and celebrate the festivals. Just as Kumbha Mela takes place at Allahabad after every 12 years, similarly, at Kumbakonam (lying in the centre of Tamil Nadu), a mela known as Mahamakham is held. Thousands of people participate in it. Taking a bath in the tank of the city, they take pleasure and pride taking dips in the Cauvery later. The city of Mayuram is famous for its beautiful peacocks. The area abounds in peacocks in bush green surroundings. The beauty of peacocks is well-known (it is our national bird also) and near the end of the Cauvery, people seem to sing its praises. The beauty of nature is really enhanced by their alluring dance in full glee. The place is known as "Mailaduturai", i.e., bank of dancing peacocks. Really, it is the Cauvery which has been helpful in giving the area the gift of peacocks, a treasure-house of beauty and grandeur not available everywhere.

Tiruvaiyaru, another city of repute on account of the famous saint poet Thyagaraja needs mention. The city is situated on the spot where five branches of the Cauvery get together. The temple whose presiding deity is Ayyarappan—i.e., the master of five rivers, is widely known. Its importance has been enhanced because of poet Thyagaraja whose birth took place at Tiruvaiyaru. The saint poet is widely read even today and his religious fervour through songs mainly dedicated to Lord Sri Rama is well-known for its influence on the common man. Great poets, saints and savants have lived on the banks of rivers and Thyagaraja was one of them to have made a contribution to India's culture on the banks of the Cauvery.

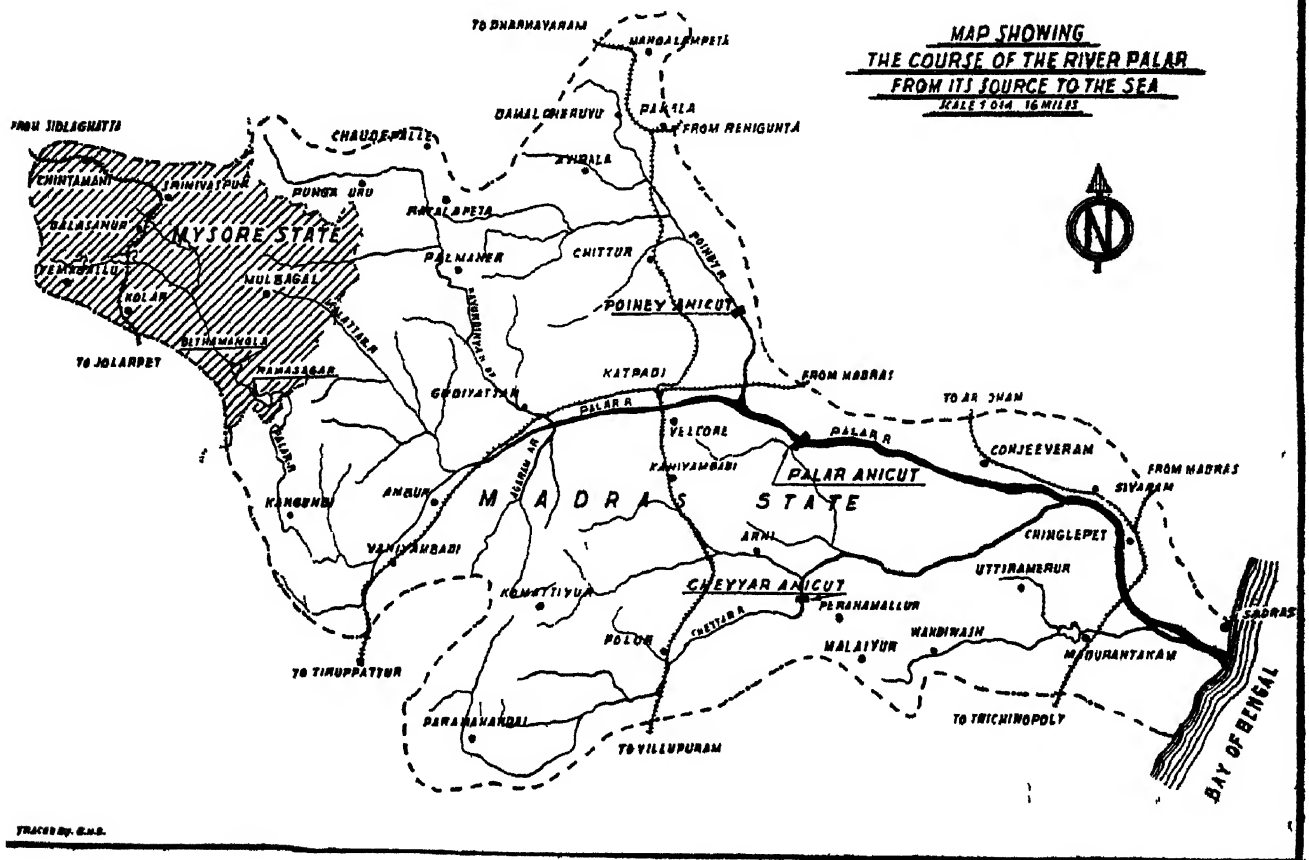
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THE PALAR

PROF C JAGANNATHACHARIAR



Its Course

The River Palar originates in the Nandi Hills of Mysore (Nandidurg), near Chintamani (Kolar Dist) of the Karnataka State. It has a length of nearly 47 miles as it flows through Mysore Plateau and drains an area of about 1,088 sq. m. up to the Tamilnadu border. Just above this border, there is a big tank by name Ramasagar and upstream of this there is another one by name Bethamangala. This latter is the main source of water supply for the Kolar Gold Fields and Kolar Municipality.

Then it enters the North Arcot Dist. of Tamil Nadu and 30 miles further down it falls through the gorges of the Eastern Ghats into the Vaniyambadi Valley, irrigating in its course the regions of Vaniyambadi, Ambur, Virinchipuram, Katpadi, Vellore, Ranipet, Wallajah and Kaveripakkam in N.A. District.

Thereafter it touches Chingleput Dist. Flowing about 4 miles south of Kanchi, it irrigates the land around Walajahbad, Pazhayaseevaram, Attur and Chingleput and then flowing

underneath the railway bridge at Pattalam, it joins the Sea (Bay of Bengal) five miles south of Sadras or Sadhurangappattinam, an old Dutch Settlement.

The total length of the river is about 220 miles and the total drainage about 5,000 sq. miles. In Tamil Nadu, many tributaries join the river and the drainage area in this State is about 4,000 sq. miles.

The Palar Basin extends up to Madras coast including the areas drained by the Kortalaayar, the Cooum and the Arani rivers. The river was then known as *Vridha Ksheera Nadi* or the Pazhaya Palar. The *Kalingattupparam* of Jayanagondar (about 12th century A.D.) mentions the Palar and Kortalaayar as two separate rivers crossed by Chola troops under the leadership of Karunakara Tondaman.

The main tributaries are

(1) The river Ponni (Porunai) or Neeva which flows through Thiruvallam and joins the Palar near Arcot.

(2) The Cheyyar which originates in the Javvadhu range near Chengam is replenished by the river Kamandala Nadi and Naga Nadi of the Arani circle and it covers a distance of 15 miles flowing through Kanchi-Kadaladi, Thiruvettipuram (in North Arcot District) and Thirumakaral (in Chingleput District) before joining the Palar at Thirumukkoodal (Pazhayaseevaram)

(3) The Vegavathi takes its source in the Damal lake, runs south of Kanchi and joins the Palar near Pazhayaseevaram

The confluence of the three rivers, the Palar, the Cheyyar and the Madu (Pampaiaru) gave the name Thirumukkoodal to that place and it is famous in Chola history. Here is the inscription of Veerarajendra (11th century), mentioning the prevalence of a Medical College with facilities and medicinal drugs given to the patients

At Sadras, where the Palar joins the sea, there is an old Dutch fort and a cemetery. Thus, the present Kolar Gold Fields of the Karnataka region, the North Arcot and Chingleput districts are watered by the river, Palar

The Tondaimandalam drained by the Palar

In the medieval period, the Tondaimandalam has been divided into 24 *kottams*, and all of them are said to be watered by the Palar river system. A *kottam* is a unit of administration corresponding to the *Kottam* in Chola-mandalam and to the Taluk nowadays. Umapathi Sivacharyar of the 14th century in his *Sekkizhar Puranam* makes clear reference to this aspect. Compare

Paalaaru valam surandu nalhamalhum
Paalai viri manam Kamazh pooncholar Torum
Kaalaaru Koli isarpada needu
Kalimayil ninraadum Eyal Tondai naatkul
Naalaaru Kottathup-puliyoor-Kottam, etc

(Meaning The Thondaimandalam region is divided into twenty-four Kottams and Puliyoor-kottam is the place of Sekkizhar. The Palar makes the mandalam fertile, as a result, there are plenty of flower-garlands emitting a sweet smell, Peacocks dance in glee to the tune of the humming of the bees)

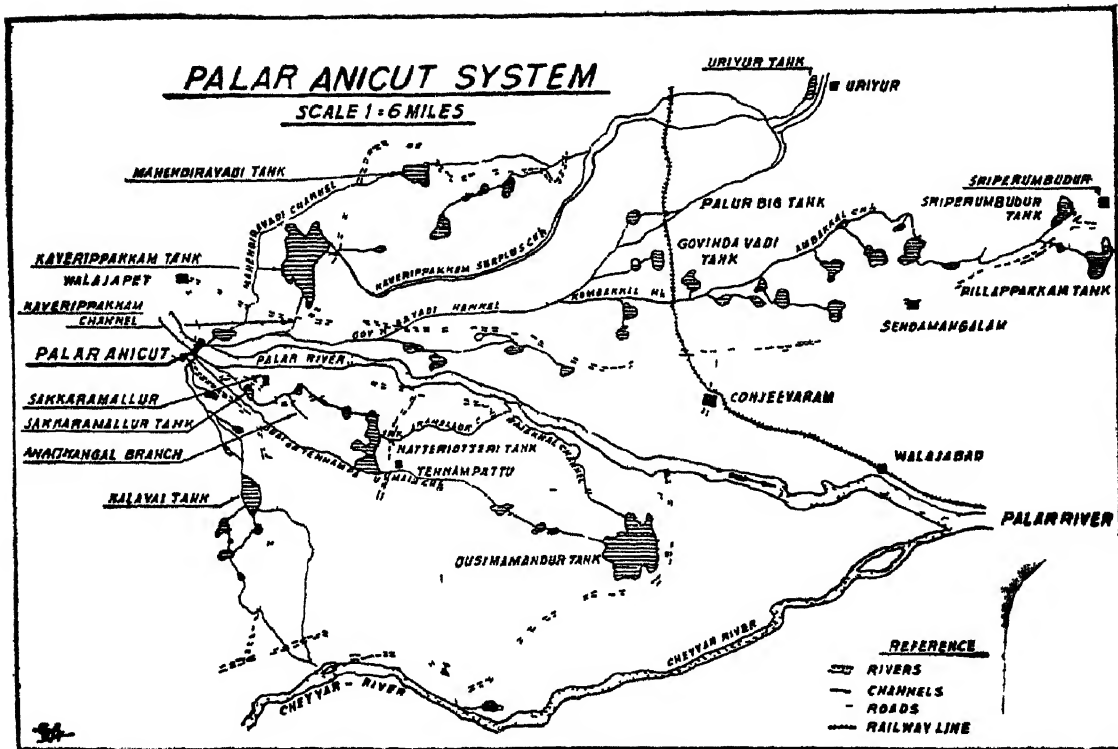
During Rajaraja's rule (985-1014 A.D.), his Empire was divided into 9 *mandalams* or Provinces and the Tondaimandalam in his time assumed the new name of Jayamkonda Chola-mandalam

Utilisation of its Waters

Nowadays, the Palar is generally a dry river and there is a joke prevalent among the people that the Paalaaru is a *Paazhaaru* and "*Paalaarul paalum illai, neerum illai*"—that is to say—that the Palar is running waste and there is neither milk nor water in it and hence to call the river as Palar is a misnomer. But, this jocular statement requires pruning, for, the river was actually flowing full without any scarcity for water, felt during the monsoon season (in the months of October and November) by the freshes in the Mysore hill ranges alongside with the Cauvery

The maximum discharge is reckoned as 1,58,477 cubic feet per second but generally there is no flow in the river for most of the year. During heavy rains, the river swells up resulting in high floods. On these occasions the river is unfordable. The floods, however, subside as rapidly as they come in. The bed is of deep sand and springs are quite common. The spring flow is tapped by means of channels dug in the bed of the river, called "Korambu channels" and are carried through the banks to irrigate large areas of lands

An anicut across the river Palar below the town of Arcot was constructed by September 1857. This anicut, was getting damaged by floods and some portions were actually washed away during the floods of 1903. In 1905 the anicut was finally brought to standards and its length since this restoration is 2,628 feet. The anicut is founded on two rows of circular wells three feet inner diameter and eight feet deep. It is sunk 12½ feet below bed. The body wall is seven feet high with the top width varying from four to four and a half feet and a base width of eight feet. The crest of the anicut is at M.S.L. 496.38. The highest flood-level recorded was 504.23 on 12-11-1903. In 1903, as in 1874 A.D., furious floods were in the Palar and the Vaniyambadi town had to bear the full brunt of the force of the river. (The Vaniyambadi floods are even today the talk of the district). In 1930 and even in the subsequent years (though not annually), we have had floods in the Palar, though not so copious as to be stored in tanks and ponds. It is only for the past 40 years or so, the flow is not regular in the river and it is said that it is due to the deepening of some of the beds of the tanks, in the Karnataka region fed by the Palar, for example the Bethamangalam tank, etc. But, one thing is certain. The Palar never fails to supply water—pure crystal clear drinking water—even today by its springs and



wells dug deep into the sandy soil. The old stanza in *Vaakkundaam*

*"Arrup-peruk-karru adi sudum annaalum
Urrup-perukkaal ulahoottum—Erravaakku
Nalla kudippiranthaar nalkoorndaraanalum
Illayena maattaar isandu"*

(Meaning Even in the hot dry summer season when there is no water flowing in the river and when one finds it difficult to walk on his bare feet on the hot sands of the river, then also the river feeds men, animals and birds with its spring water so also, those born in noble families will never say "no" to anybody, even under straitened circumstances)

Sekkizhar of the 12th century in his magnum opus, the *Peria Puranam* refers to this phenomenon in a marvellous manner with a beautiful homely simile which runs as follows

*"Pallar tavara peruhupaal sorimulatt taarpol
Mallar venlin manal idar psaindu kai varuda
Vella nner iru marungukaal vazhumidanderip
Palla neel vayal parumadar udarppadu Paali"*

(Meaning The suckling child strikes with its soft hand the breasts of the mother and milk springs out automatically from that place similarly, the farmers strike and dig the sand-heaps in the Palar and the water springs out and begins to flow in the channels on both sides of the bund to irrigate the fields in the lower

level by breaking open the hindrances of mud and sand there)

In this connection, one must note that most of the villages in North Arcot District and Chingleput District which are on the banks of the river Palar receive their water-supply not only for agricultural operations but also for drinking purposes. Various pump-sets are installed all the way and thus the sub-soil water is utilised mainly for irrigating the fields. At present, the Palar water is carried through conduit pipes to Tambaram and its suburbs and it may be extended to other villages too in the Pallavaram area.

Antiquity of the River Basin

The antiquity of the Palar Basin can be vouchsafed by a survey of the region around the present Poondi reservoir, e.g., Attirampakkam, Vada-Madurai, Venbakkam and its vicinity. The area is geologically very important because we find Paleolithic stone implements used as weapons before the Neolithic Age and the Iron-Age, i.e. about 4,000 years ago. Thus, the Palar area is old in civilisation. Geologists and Archaeologists have surveyed the entire region and brought forward brochures, for example, the one by Sri V D Krishnaswamy on the pre-historic vestiges around this basin.

"You may invent an image through which to worship God, but a better image already exists—the living man. You may build a temple in which to worship God, and that may be good, but a better one, a much higher one, already exists—the human body. There are the altars, but here is the greatest of altars, the living, Conscious human body—and to worship at this altar is far higher than the worship of any dead symbols."

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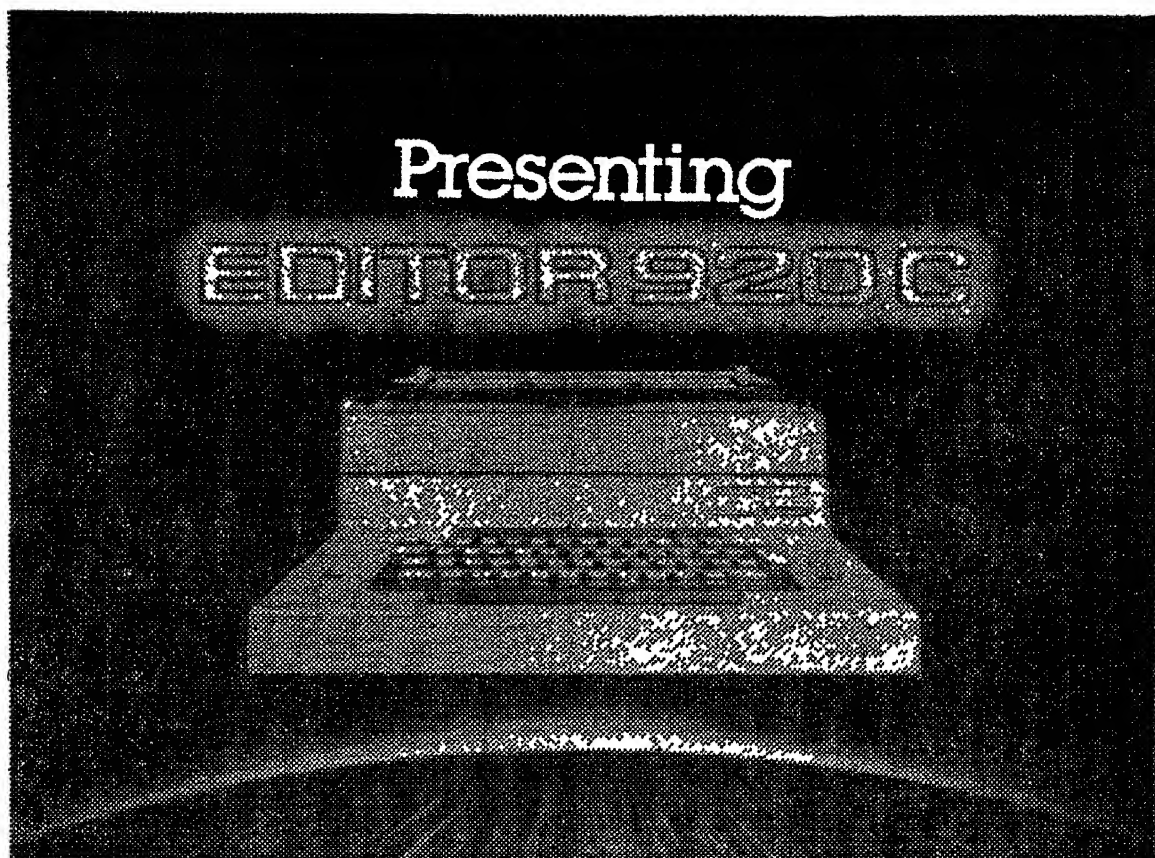
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Further, the range of hillocks extending from Pallavaram up to Tirukkarukundram is more or less in the nature of a 'Charnakite Platform' and it affords good quarries of gravel to be used as road-material these gravel stones are famous not only in our country but also outside Big boulders are taken from this range to protect the Madras Port and the shore Temple at Mahabalipuram from being eroded by the breakers and from being silted by the under-currents and thus they act as sand-screens as well

The Sanctity of the River Palar

The origin of the river itself is sanctified In the days of yore, Sage Vasishtha was staying in the Nandi Hills—30 miles (48 kms) from Bangalore on Mysore Plateau—with his cow Kamadhenu This cow saw the Rishabam or the Bull, the vehicle of Lord Siva and made overtures to it Seeing this, Vasishtha took a blade of 'Kusa' grass, enchanted it with *mantras* and placed it on the bull and the bull turned into a calf, just born Seeing the young calf, Kamadhenu's heart melted and began to pour milk from its teats to feed the calf The milk that spilled on the Nandi Hills began to flow as "tirtham" (or holy water) and hence the name "Palar" has come to stay in this land of ours This is the Puranic legend and it is authenticated by Sekkizhar in his *Peria Puranam* as follows

*"Tunga Maatavan surabiyin tirumadi sorippaal
Pongu teerthamaai Nandimaal varai misaip poondai
Angan nittalan sandanam akilodu manigal
Panga yattatam nraippa vandizhuvathu Paali"*

(Meaning The Palar originates in the Nandi Hills in the following way Vasishtha's cow began to shed milk from its teats and it began to flow as Paali or Palar, the waters of the river carried with it pearls, sandalwood logs, eagle-wood logs (ahil) and gems and filled the lotus-tanks to the brim)

The Important Tanks fed by the Palar Water

The Velleri Tank in Gudimallam, Tumbeneri, Kaveripakkam Eri, the Dusi-Mamandur Eri, Valattottam Eri are some of the tanks fed by the Palar Of these, two deserve special mention (1) the Kaveripakkam Tank and (2) Dusi-Mamandur

1 *The Kaveripakkam Tank* Its length is about 6 kms 33 villages are irrigated by this tank It receives supply of water from the Palar canal

starting from the anicut at Puduppadu Water from the Puduppadu anicut is carried by four canals regulated by sluices to various villages for agricultural operations The overflow of the water from this tank is let into the Kortaliyar river

2 *The Dusi-Mamandur Tank* This is a big tank in North Arcot District, 4 miles south of Kanchi The Palar water after filling the Kaveripakkam tank, the Vengallattur tank and the Chittatur Tank, reaches the Dusi-Mamandur tank Besides, there is a direct channel from the Palar river known as the 'Raja Canal' (Raja Kaalvai) Frequently, this canal gets silted and sand-bars are formed choking the supply channel There is also a supply channel direct from the Cheyyar river but it has been left uncared for all these years

The Dusi-Mamandur tank is 25 sq miles in extent and when full, it can yield water for three years to about 36 villages which will raise a double-crop or even a triple-crop in their lands Dr Slater, the famous economist in his survey of South Indian villages, makes special reference to this Dusi village as the most prosperous one

This Mamandur tank also helps birds which frequent the Vedantangal tank, for we can see a swarm of black herons and white cranes wading through the water and swimming in the tank in search of prey There is a small rocky mound in the middle of the tank and it acts as a buffer, preventing the sand carried by the supply channel from being deposited, in the bed of the tank and thus shallowness is prevented The bund of the tank is both natural and artificial The natural bund is made of rocks and one rock called the "Idayan Kal" stands straight and is visible for miles The artificial bund was raised during the Pallava period and there are two cave-temples, in one of them we find the several titles of Mahendravarman inscribed and these titles show the interest taken by the ruler in religion and in fine arts like Music, Painting, Sculpture and Temple Architecture

Vegetation and Crops

The main occupation is paddy cultivation Ploughing the fields to make them mry, sowing the fields by broad casting of seeds, rearing of seedlings in nursery-beds, plucking the seedlings and transplanting them in the fields—all these agricultural operations are effected in the Palar Basin

In the hilly tracts, *Kambu*, *panwarahu*, *mocchai*, *tuvarai*, *aamanakku*, *kadugu*, etc are grown. On the banks of the Palar river, mango-groves are seen in plenty all over the stretch, from Tirupattur to Wallajah and hence mango trade is brisk in these parts. Varieties of mangoes like Peethai, Neelam, Kaadar, Dil-pasani, Malgoa, etc are available with raw mangoes for pickles as well. In Ambai and in Saatkai near Gudiyattam, "Saatiukudi" (sweet-lemon) fruits are available in plenty. Coconut groves and Palm-groves are also seen along the banks and Sekkizhar summarises all these in a stanza which runs as follows

*'Ongu cennelin pudayana uyarkazhark Karumbu
Poonkarumbayal midavana booham ap poohap
Pangu neelkulari tengubaring Katali van palavu
Tungu teenkanuch chudanmeel veliya cholai'*

(Meaning Sugar-cane grows tall by the side of luxuriant paddy. By the side of sugar-cane, tall palm-trees grow. By the side of the palm-trees are coconut trees with bunches of coconuts adorning the top. By their side are grown the plantains, the jack-fruit trees and the mango-trees and these act as a fence protecting the area around.)

Forest Produce

As the Palar course lies through forests also, we find sandalwood trees, black ebony trees, jack-trees, hard bamboos, guavas, pomegranates and plantains growing all the way. The forests yield good timber.

Transport and Communication

There are bridges constructed across the Palar river and the important ones are as follows

(i) The bridge connecting Ranipet and Arcot. It is about 616 metres (2,024 ft) in length. It was built at a cost of 29 lakhs in 1959 A.D.

(ii) The bridge connecting Vellore and Katpadi. A beautiful road is laid over the bridge.

(iii) The bridge across the river south of Chingleput. This is the first bridge in the whole of India raised by reinforced concrete (R.C.). The construction was completed in 1956 at a cost of Rs. 25.75 lakhs.

Causeways are also laid across the Palar, for example, at Sevilumedu, Wallajahbad and Attur. These causeways may get flooded in the rainy season and then, country-boats will ply from one bank to the other.

Railway lines run parallel to the river Palar, carrying heavy traffic. Buses run in plenty connecting Madras as well as the interior villages in the Palar region.

Religious Background

The Palar as already mentioned is a holy river and it is *Ksheera Nadi*. A dip in the waters of this river washes away our sins as this water is supposed to be the milk-flow from the udder of Kamadhenu, the divine cow.

Festivals like (i) the Tiruvooral (Spring) festival of Lord Varadaraja of Kanchi during Chitra Purnami (i.e., Full-Moon-Day in the month of April) (ii) the Onirukkai festival of the Lord of Tiruvetha of Kanchi during Thai Masam (Jan-Feb) (iii) the Seevaram Parivettai festival of Lord Varadaraja of Kanchi during Thai Pongal (Jan, advent of Spring season) are all celebrated on the banks of the Palar river. A brief description about them is attempted below.

(i) The Tiruvooral Festival (Chitra Purnami)

This is in hot summer and hence a 'Poop-Pandal' (Flower Shami) will be erected in the river Palar on a sandy platform encircled by spring water dug in the bed of the river by devotees from neighbouring villages like Sevilumedu, Ayankulam, etc. The Lord of Vishnu Kanchi, Varadaraja, also known as Perarular (The Great Lord of Mercy) will start from his abode and will be taken in a palanquin to the villages on both banks of the Palar like Sevilumedu, Dusi, Kolivilakam and Ayankulam. At noon, the deity will stay at Ayankulam temple and at sunset, he will start from the temple and after visiting the "Nada-Vavi" or (the wall encircled by a foot-path), He will come to river Palar at about 8 p.m. in all grandeur with the full-moon shedding its lustre on the sandy surface. After circumambulating the 'Poop-Pandal' thrice, he will have his "aasthanam" in the midst of the Pandal and Tirumanyanam (sacred-bath) will be performed—a sight for the Gods to see at midnight. After a stay for a

few hours, the Lord will return to Kanchi. This festival is an auspicious one at the beginning of the New Tamil Year as it reminds us of the *Garudotsavam* of Lord Varadaraja on the subsequent Full-Moon-Day, *Vaikasi-Paurnami*, just a month later.

(ii) The Orirukkai Festival

Orirukkai is a village on the Palar river, about three miles from Kanchi. The Lord of Tiruvehha—the *utsava* idol, will be taken in procession along with Tirumalisai Alwar and his disciple Kanikkannan to a mandapam on the Palar bund near Orirukkai village. After *Tirumanjanam* (sacred-bath), Archanai and religious discourses there on the Palar sands, the deity will return to his abode at *Tiruvehha*. This is a grand festival centuries old.

(iii) The Seevaram Parivettai Festival

Parivettai is a chase or a hunt. This is celebrated more as a gala day after Pongal (advent of Spring time). The Lord of Kanchi will come all the way (about ten miles) in all grandeur here and will stay in the Perumal Koil at the foot of the hill Tirumukkudal (site of confluence of three rivers), is on the other side of this hill on the bank of the Palar.

Other festivals like the Draupadi Amman festival at Vellore, the Gangamma yatra festival at Gudiyattam, are worth mentioning. As usual, elsewhere, the Muslims at Ambur, Vaniyambadi, Periampet, etc. celebrate the Muharram and the Ramzan festivals.

Settlements on the Palar Basin

1 *Tirupattur* The Palar makes an entry into Tamilnadu from K. G. F. through the north-west corner of this taluk. This is a busy trading centre for jaggery, chillies and Bengal gram. The Elagiri hill which is a health resort, is very near this place (5 miles). This is a collecting centre for sandalwood and sandal-oil is prepared here.

2 *Elagiri* This is a small town on the hill, 16 kms from Vaniyambadi and 5 kms from Jolarpet. A road runs about 15 kms long. The hill is 3,200 feet high with thick fertile forests and beautiful dales. The area on the top of the hill is about 5 sq. miles and there are about 13 villages. Fruit orchards are there with tomatoes, pomegranates and saattukudis.

3 *Vaniyambadi* This is the first big town on the river Palar on the Tamilnadu side and the Vaniyambadi floods of 1847 A.D. and 1903 A.D. are still the talk of the people in these parts.

4 *Ambur* The Javvadhu hill-range begins from this place and extends up to Chengam. This is an important centre from the military point of view, as it is very near the Karnataka border (only 80 kms, i.e. 50 miles).

5 *Gudiyattam* This place is 5 kms north of the river Palar. The Gangamma Jatra is famous here. Weaving is the main occupation.

6 *Virinchipuram* This place is 13 kms from Vellore. It is known also as Brahmapuram, Vishnupuram, Gauvipuram and Margabandheeswaram. In the local temple, there is a well and on the last Sunday in the month of Kartikai (Nov-Dec), demented, hysteric and barren women bathe in the well and sleep in the Sannidhi and in course of time they get cured of their ailments. The famous philosopher Appayya Dikshitar, worshipped this Iswara. Sarva Ellappa Navalar sang the *Virinchippuranam* and Margasabaya Devar sang the *Tiruvirinchai*. Arunagirinathar refers to this place in his *Tiruppugazh*. There is an inscription here which prohibits dowry for marriages done within the temple, as determined by the "antanars" there. (South India Inscriptions, Vol I, p. 84).

7 *Vellore* This is situated on the bank of the Palar river underneath a hilly range which rises up to a height of 500 feet. The population of the town will be a lakh and a quarter and on the other side of the Palar is Katpadi, which is connected with Vellore Town by a beautiful bridge across the Palar. So, we can say that Vellore-Katpadi are twin towns like Srirangam, Trichy, Howrah-Calcutta. The bazaars are replete with all sorts of grains and mangoes and especially malgoa are available in the markets.

The Vellore Fort is famous in history as an impregnable one on the southern bank of the Palar and the surrounding moat is supplied by channel water from the Palar and from a tank named "surya-kulam", to the east of Vellore Town. The upper portion of the fort is very expansive and cars and vehicles can run on them. This fort is said to have been built by Bommi Reddy and Thimmy Reddy, who hailed from Bhadrachalam in Andhra Pradesh.

On the north-eastern side is the now famous "Jalakanteshwara Temple". The construction of this temple began in 1212 A.D. and took nine years to finish it. (1221 A.D.) For nearly about three centuries, Pujas were performed without interruption, but, after the Muslim occupation, it was stopped. It is said that the idols were taken away to "Sattuvacheri" nearby. After many vicissitudes of fortune now, a few years ago, the "Jalakanteshwara" was reinstalled, with great eclat, to the beating of drums and chanting of *Vedas*. Regular pujas are now performed. The Kalyana Mantapam inside the temple is a veritable treasure-house for sculptural excellence. This is the North Arcot District Headquarters in Tamilnadu.

8 *Katpadi* This is on the bank of the Palar river and is 700 feet above sea-level (210 metres). This is a railway junction. Trains to Madras, Villupuram and to Jolarpet run from here.

9 *Thiruvallam* This is a holy place sung by Saint Thirugnanasambandhar in his *Thevaram*. Arunagirinathar refers to this place in his *Thiruppugazh*. Valli Malai is 13 kms from this place. Thiruvallam stands on the Neeva (Ponni) river, and joins the Palar 2½ kms below.

10 *Arcot* This is on the southern bank of the Palar. The siege of Arcot by Clive is famous in the history of the Carnatic Wars.

11 *Ranipet* This place derives its name from the Rani or Queen of Jaisingh, (Desingu Raja of Gingee), who self-immolated herself here after the demise of her husband. This place is on the northern bank of the Palar River.

12 *Wallajah* This place is named after Muhammed Ali, the son of Anwar-ud-deen, the Nawab of Arcot. This is famous for weaving and cottage industries.

13 *Kaveripakkam* This is historically associated with the victory of Clive over the French in the Carnatic War in 1752. Hyder Ali was checked here by Sir Hector Munroe on his hurricane sweep of the Carnatic during the first Mysore War. There is a big tank as already mentioned and the overflow of this tank runs as the Cooum, touching Takkolam.

14 *Takkolam* (Tiruvural)—This is 11 kms from Arkonam. The Gangadeeshwarar Temple is famous here, sung in the *Thevaram* and water is always oozing out of the mouth of the Nandi

here and hence this place came to be called as Thiruvural. The water circumambulates the temple Mandapam and joins the river Kallaru which later joins the Cooum. The battle of Thakkolam is famous in Chola history and Rajaditya lost his life here in his fight with the Rashtrakuta King, Krishna-III in 949 A.D.

15 *Thirumalperu* This is near Palloor 2½ miles south. This is also called Harischakrapuram, because Vishnu received his chakra (Disc), Sudarshanam, from Lord Siva here by worshipping him.

16 *Kuranganilmuttam* This is very near Dusi village in Cheyyar Taluk, Chingleput District and about 10 kms from Kanchipuram. The old Pallavar caves known popularly as the Pancha Pandava caves are in its vicinity.

17 *Kanchi* This stands on the Vegavathi river, a tributary of the Palar. It is Prithvi Sthala among the five Panchabhootha Sthalas. The local deity is Kamakshi Amman and she has done all the 32 kinds of charities in one *Niazhi* (one-eighth of a measure) of paddy. The Navanmars, Iyadigal Kadavarkon, Tirukkurippu-Tondar and Sakkiyar are associated with this place. Ramanuja and Thirukkanchi Nambi were doing service to Lord Varadaraja. Other famous temples are the Ekambareswarar Temple, the Kailasanathar Temple, the Vaikunta Perumal Temple and the Kumarakottam and they are all of historic importance. The two important *Puranas* which deal about the place are *Kandapuranam* (about 13th cent.) written by Kachiappa Shrivachariar and the *Kanchi Puranam* written by Sivagnana Munivar and Kachiappa Munivar (18th c.).

Kanchi, on the river Palar, is one amongst the seven sacred cities of India, like Ayodhya, Mathura, Maya, Kasi, Avantī and Dwaraka. This is a great place of learning associated with Sri Sankara, Sri Ramanuja, Sri Vedanta Desika, Sri Yadavaprakasa, etc. and the Pallava Kings' stronghold—famous for Temples, Sculptures and Arts. In recent years, Tiru Pachayappa, the great philanthropist and educationist and Tiru Annadurai, the late Chief Minister, Tamilnadu, hailed from here.

18 *Vedantangal* Midway between Kanchi and Sadras lies Vedantangal, the unique place of the vast sanctuary for birds—as in *Srirangapatnam* of Karnataka and *Bharatpur* of Rajasthan. The place is near the banks of the

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Palar and a supply channel runs from the nearby Madurantakam Lake to the Vedantangal Lake. In the midst of this lake, there are about 500 big trees where birds from all over the world take refuge. There is a law prohibiting shooting 40 miles around the place. The north-east monsoon brings rain in August and birds assemble here from September onwards in lakhs, during the winter season (Nov- March). Since early morning, they go out in search of prey in the vast vegetation fields and in the lake, and they return at dusk. Hence, at dawn and at dusk, these clusters of birds are a great scenery.

The birds come from various Continents avoiding the unbearable cold there. Various

types of bird-migrations of different hues and sizes are indeed a sight to see.

19 *Sadras* Near this place, the Palar joins the sea. There is a Dutch fort and the Dutch came to this place in 1647 A.D. Later on in 1825 A.D. it came to British hands. The Kalpakkam Atomic Power Station is very near this place.

Thus, the Palar river is an ancient one, hallowed in Tamil Literature and I have given just a glimpse about its geographical and historical importance.

* * *

RIVER PALAR

Statistical Data.

Drainage area	3,974 sq miles
Maximum flood discharge	1,58,477 c ft per sec

Irrigation:	<i>Acres</i>
Mahendravadi channel	4,849
Sakkaramallur channel	5,105
Kaveripakkam main channel and branches (6,675 + 40,017)	46,692
Dusi Channel	19,903
Total	76,549 or 76 5 thousands of acres

River Krishna

DR. S. SUBBIAH AND A. GANESH

River Krishna (means 'the black' in Sanskrit), flowing across the Peninsular India in the Deccan Plateau, is one of the great rivers of South India. For the Hindus, it is a holy river, holier than Godavari and Kaveri, the two other great rivers of India. It is a river involving three States of India, Maharashtra, Karnataka and Andhra Pradesh. It plays a key role in their agricultural economy and the development of hydro-electric power.

Rising from a spring, 64 kms from the Arabian sea in the Western Ghats at an altitude of about 1,330 m just north of the hill station of Mahabaleshwar, the river Krishna flows relentlessly for a distance of about 1,400 kms to reach the Bay of Bengal at the southern end of Krishna district of Andhra Pradesh. In upper reaches, fed by the streams of Koyna, Varna and Kurundrad, it gushes down towards south-south-east in a highly meandering course. Here the river is too rocky and swift. However, its water is heavily used for irrigation all along its sides.

towards east. It flows almost eastward, till it receives another holy river, Tungabhadra. In Belgaum and Bijapur areas, it flows, building up high dark banks of black soil 6 to 15m high, especially on the south. In this upper middle course, it has developed a number of islands and receives two important right bank tributaries, Ghataprabha and Malaprabha. Bhima is another important tributary which originates north of Pune in Maharashtra, runs for about 860 kms and joins the Krishna before the river Krishna drops down from the Deccan Plateau. In Raichur district, the Krishna actually leaves the Deccan table land to reach the alluvial doabs in the east. This climbing down is quite steep and the fall is as much as 122 m in about 3 kms. The *Imperial Gazetteer of India* (Vol. XV, p. 335) vividly describes the rapid flow of water in this fall-zone: "in times of flood, a mighty volume of water rushes with a great roar over a succession of broken ledges of granite with lofty columns of spray."

The Route

When the river crosses the Maharashtra-Karnataka border, it takes a sudden turn

Meeting Points

The lower course of the river is largely fed by two important tributaries, the Tungabhadra

Tributaries of the Krishna

Name of the Tributary	Length (Km)	Place of Confluence	Drainage area (Km ²)
Ghataprabha	283	Kudhisangam	8,829
Malaprabha	306	30 km upstream of the Narayanpur dam site	11,349
Bhima	861	26 km from Raichur	76,614
Tungabhadra	531	70 km above Srisailem	71,417
Musi	240	Wazirabad	11,212
Muneru	235	Above the Prakasam Barrage at Vijayawada	10,409

Krishna Basin

Land use and Irrigation

Particulars	Andhra Pradesh	Karnataka	Area ('000 ha)		Total
			Maharashtra		
Cultivable area	5,257	9,276	5,766		20,299
Net Sown area	3,627	7,093	4,880		15,600
Gross Sown area	4,027	7,268	5,062		16,357
Net irrigated area	1,130	937	563		2,630
Gross irrigated area	1,652	1,056	743		3,451

and Musi. Originating from the Shimoga hills in Karnataka, as two rivers Tunga and Bhadra—the Tungabhadra runs for about 500 kms, playing a vital role in the economic development of Karnataka. Bhadravathi, known for its steel plant and Hospet known for its iron ore deposits are located on the banks of this river only. The 'Hampi runs'—the remnants of Vijayanagar, the capital of the great Hindu kingdom of Krishna Deva Raya—stands on the right bank of Tungabhadra near Hospet. Many foreigners have visited Vijayanagar and paid glowing tributes for its glories. Kishkindha, the place where Rama got the definite news about Sita from Hanuman, is believed to be close to Hampi. Tungabhadra meets the river Krishna at Srisailem reservoir.

for about 160 kms between the Krishna and Guntur districts and drains into the Bay of Bengal in two principal months. It is in the lower course that the Krishna formed its fertile delta and its waters is largely used for irrigation. In this part of its course, Krishna is known for its load of silt. During floods, it carries silt daily to cover an area of about seven sq kms to a depth of about 30 cms. This enormous load of silt and the gentle land slope have helped the river to build up a large and fertile delta. Vijayawada is located at the head of the delta and here the river passes through a gap of 1,170 m wide between low range hills. A barrage, called Prakasam barrage, was constructed at this gap to take irrigation canals on both sides of the river.

Its Passage

The river Krishna passes through a narrow gorge for a distance of about 130 kms from Sangameswaram, just below the confluence of Tungabhadra to reach the Nagarjunasagar reservoir. Below this reservoir, joins the Krishna, the left bank tributary of Musi on which the capital of Andhra Pradesh, Hyderabad, is located. On reaching the Eastern Ghats, the Krishna turns sharply south-eastwards and flows

The Krishna Basin

Having the Bhima in the north and the Tungabhadra in the south, the Krishna runs in between, forming the Krishna Basin. This basin includes some of the worst semi-arid and arid regions of the country, thereby necessitating these rivers to be harnessed. Most of the basin is semi arid with an arid zone in the centre. Humid zones are found only in the west on the hills. Rainfall in this basin is mainly due to

Krishna Basin

Sources of Irrigation

Sources of Irrigation	Andhra Pradesh	Karnataka	Area Irrigated ('000 ha)		Total
			Maharashtra		
Government and Private canals	1,292	565	286		2,143
Tanks	170	214	9		393
Tube-wells	20	—	8		28
Wells	150	225	400		775
Other Sources	20	52	40		112

south-west Monsoon current and its distribution is influenced by physical features. Except for a narrow strip along the Western ghats and a small portion at the lower end, the Krishna Basin has an average annual rainfall of less than 500 mms of which 75 per cent occurs during the south-west Monsoon.

The Various Projects

Irrigation has been practised in the basin long since by tanks and diversions. After Independence, a large number of projects have been started. The most important of these are Rajolibanda, Tungabhadra, Musi, Nagarjunasagar, Radhanagri, Ghod, Khadakwasla, Koyna, Bhadra, Malaprabha, Ghataprabha and upper Krishna projects. Now there is little possibility of increasing the irrigation in this basin, unless inter-basin diversion is augmented. Tungabhadra project is a joint scheme between Andhra Pradesh and Karnataka. The right bank canal irrigates 37,374 hectares of land in Karnataka and 60,247 hectares in Andhra Pradesh and the left bank canal entirely irrigates the area of Karnataka. The Nagarjunasagar project consists of masonry-cum-earth dam, irrigating an area of about 830,000 hectares. The Malaprabha project irrigates an area of 220,000 hectares in the dry Belgaum district. The Upper Krishna project was slated largely for Bijapur district.

Hydro-Electric Projects

There is a large scale development of hydro-electric power system in the Krishna Basin. Bhira (132 MW), Bhirpuri (70 MW) and Khopoli (70 MW) are the units completed by the Tatas in the early part of this century, through transbasin diversion of east-flowing waters to the west. The largest project in this region is the Koyna Hydro-electric project. The present total installed capacity of hydro-electric projects in this basin is 1892.8 MW, of which 40 per cent comes from the Koyna project. Srisailem project is another major one located in the lower stretch of the river. The Krishna has no further possibility of westward diversion for power generation.

As this basin involves three States, the development of this basin is dependent on the mutual agreement and co-operation of these three States. As known, this basin is also not free from water disputes. The disputes have got developed on the advent of planning for large irrigation and hydro-electric projects initiated during the First Five Year Plan. A commission was first set-up and it submitted its report in 1962. Based on this report, interim allocation of water was made between the States. Not satisfied with this allocation, Maharashtra and Karnataka wanted a tribunal to look into the disputes. A tribunal under the Inter-State Water

Some Projects of Krishna Basin

<i>State</i>	<i>Project Name</i>	<i>Year of Completion</i>	<i>Area Irrigated ('000 ha)</i>
Andhra Pradesh	Krishna Delta	1855	556.4
	Kurnool-Guddapah Canal	1966	122.2
	Tungabhadra Canal	1962	268.9
	Nagarjunasagar	1956	832.0
Maharashtra	Nira Canal	1968	216.0
	Bhima	1965	173.0
	Krishna	1966	106.3
	Warna	1966	99.1
Karnataka	Tungabhadra	1972	273.0
	Malaprabha	1963	206.6
	Upper Krishna	1963	409.1

Disputes Act of 1956, was set up in 1969 and it gave its decision in 1973. The efficient use of water, further inter-basin diversions and mutual help and co-operation among the States are further required to an efficient development of this basin.

Hydro-Electric Power of Krishna Basin Installed Capacity

<i>Project Name</i>	<i>Installed Capacity MW</i>
Koyna Stage 1 and 2	540 0
Koyna Stage 3	320 0
Srisaïlam	440 0
Bhira	132 0
Nagarjunasagar	100 0
Bhira Tail Race	80 0
Khopoli	72 0
Bhirpuri	72 0
Tungabhadra (Right-Bank)	57 6
	<hr/> 1,813 6
<i>Minor Projects</i>	
Radhanagari	4 8
Tungabhadra (Left Bank)	27 0
Tungabhadra Right Bank and Hampi	14 4
Bhadra	33 0
	<hr/> 79 2
Grand total for Krishna Basin	<hr/> 1,892 8 <hr/>



Dakshina Ganga - The Godavari

Rivers have played a very important role in the evolution of human civilization. They nurture all life and hence are referred to as mothers. Right from prehistoric times, man has been living on the river bank where he drank water, made stone tools out of pebbles on the sandy bank and hunted animals that came to the river for water. The earliest human civilizations were riverine ones and even today we know how important rivers are in our life.

Its Course

The Godavari is the largest river of South India. It rises from the Sahyadris in western India, from a small source at Tryambakeshwar, near Nasik, in Maharashtra. It runs through uplands first and then through the alluvial plains of Marathawada. When it enters Andhra Pradesh, it becomes a mighty river and its total length is about 1,400 kms. It joins the Bay of Bengal in three main streams and this delta region is one of the most fertile in the country. In Maharashtra and Andhra Pradesh, the river is joined by ten large tributaries, such as the Purna and Manjra, which in fact, are large rivers. In Andhra Pradesh, the river is not crossable, but is navigable. It meets the sea near Vishakhapatnam. The river prominently figures in ancient Indian literature. It has sustained human life from the day man has set foot in Peninsular India.

About one lakh years ago, or even earlier, man began to wander in the Godavari valley, the evidence for which has survived in the form of crude stone tools, known to archaeologists, as Lower Palaeolithic. These have been picked in a good number, at Gangapur, near Nasik and at Nevasa on the banks of Pravara, a tributary of the Godavari.

About 50,000 years ago, the human population increased considerably and the small flake tools of this age are found at several places in the Godavari valley. What is more, we now know the animals that roamed in this region. In Marathawada, near the confluence of the Godavari and the Manjra, vast quantities of animal fossils have been recently found. They include species of the wild elephant, wild cattle, rhino, etc., which show that the climate in those days

was very congenial, resulting in a thick cover of vegetation. Consequently, food was plentifully available to man and hence the increase in population. Possibly, there was some climatic change between 25,000 to 10,000 years but the human relics of this upper Palaeolithic are not well documented in the Godavari valley.

Some 10,000 years ago, the climate again became congenial and natural food became abundant. This phase, called Mesolithic, is well represented in the Godavari valley. Man roamed along the banks of the mighty river and its tributaries but now he was not interested in hunting large animals any more as he developed a weakness for small game and fish. He tamed the dog, which assisted him in hunting. Man was still living in the open and was as yet at the mercy of nature. This state of affairs continued till some 4,000 years ago.

For thousands of years, the Godavari has been depositing fertilizing silt on its banks on which there was a thick cover of vegetation. As a result, the alluvium was gradually turning dark and the black cotton soil, which is known for its fertility, was formed some 8,000 to 10,000 years ago. It was on this black cotton soil that the first peninsular civilization evolved. According to scientists, the climate between 3,000 to 7,000 years, was wet and the man in the Godavari valley had not to worry much about his food. Plant foods such as fruits and roots, and small game was plentiful and this would therefore explain why agriculture was introduced quite late in this region. It has been observed that human beings are rather reluctant to adapt to new techniques unless they are forced to do so and even today there are some tribes which subsist on hunting-gathering although they are not ignorant of the techniques of food production. Thus between 5,000 to 10,000 years, the hunter gatherers in the Godavari valley did not bother to shift to agriculture. But the population was growing tremendously and the available natural foods were fast depleting and the only alternative was to produce more food in a smaller area and hence the people began to practise incipient agriculture, which, along with stock-raising and hunting-fishing, provided the subsistence base.

Thus, settled life first began in the lower Godavari valley some 4,500 years ago. The people lived in small round huts, produced *kulith* and *ragi* and kept herds of domesticated cattle and sheep-goats. They used stone tools and had no knowledge of metal. In the upper Godavari valley in Maharashtra, the refugees of the Indus cities in Sindh and Gujarat, had already arrived in 2,000 B.C. Their remains have recently been unearthed at Daimabad, situated on the left bank of Pravara (Ahmednagar district, Maharashtra), a tributary of the Godavari. However, the upper Godavari valley was dotted with early farming communities in the middle of the second millennium B.C. It appears that the climate was then congenial and the latter half of the second millennium B.C. was a most prosperous phase in the pre-history of the upper Godavari basin. The people built large rectangular houses, used beautiful painted pottery, cultivated a variety of grains such as wheat, barley, lentil, peas, pulses, etc. They even practised crop rotation which became possible because of irrigation. They had belief in life after death and hence buried the dead in houses, and worshipped a mother goddess. They had mastered the tech-

nology of copper but the metal was scarce and was therefore used sparingly.

The close of the second millennium B.C. is marked by a drastic change in climate in the upper Godavari valley. The rainfall was decreasing sharply and because of frequent droughts, the settlements were deserted only to be re-occupied later after a lapse of four or five centuries. In the lower Godavari basin, the people continued to live probably because the climate change there was not quite drastic. But in the upper Godavari, it is highly likely that the early farming communities had resorted to sheep/goat pastoralism and led a semi-nomadic life.

The river comes into prominence again with the ushering in of the historical period from 6th century B.C. This was the time of great religious movements in north India where Buddha and Mahavira were preaching a new gospel and the political scene was marked by the rise of *Janapadas* or the Republican States one of which was located in the upper Godavari valley. In the early Buddhist and Jain texts, its name is given as *Ashmaka*, the capital of which



Godavari at Nasik

was *Pratishthana*, which can be identified with the present town of Paithan (District Aurangabad, Maharashtra). The *Janapada*, probably comprised Aurangabad and Nasik districts and was not very extensive. It is surprising that the first and the only early *Janapada*, south of Narmada, should have flourished in the Godavari valley, but the reasons for this are not far to seek. The region is well watered by the river and has a rich hinterland which would have attracted a large human population.

The other State which also figures in later literature, was Mulaka, which probably comprised the districts of Poona and Ahmednagar, in Maharashtra. Of the two, Ashmaka was definitely earlier, because the *Garuda Purana* (Ch. 142), tells us that Mulaka was founded by the son of King Ashmaka, who was the founder of the former. What is more, these two were adjacent States and the Godavari formed the border between the two. The Ashmakas are said to have fought on the side of the Pandavas in the *Mahabharata War* (M B VII 85).

In early literature, we come across the legendary origin of the Godavari. She is sometimes referred to as Gautami Ganga. According to the legend, the hermitage of sage Gautama was located in the Brahmagiri hills near Tryambakeshwar, not far from Nasik where the river originates. During a severe drought, several sages from the surrounding region came to stay in Gautama's hermitage. It was at this time that Parvathi became jealous of Ganga who was residing in Siva's matted locks. Hence, she, in consultation with Ganesha and her maid Jaya, chalked out a plan to dislodge Ganga. Jaya assumed the form of a cow and entered the farm of Gautama. When the sage drove her out, she died. In order to expiate for this sin, Gautama had to bring down Ganga on earth. This he did after a long penance and then Ganga descended on earth. This happened when Jupiter was in Leo, that is *Simhastha*. Hence, the river is known as Gautami Ganga and because she gave life to a cow, she also came to be known as Godavari.

This would explain why bathing in the Godavari during the *Simhastha* is said to be auspicious. According to Skanda Purana, only one bath in the Godavari during *Simhastha* is equivalent to bathing in the Bhagirathi for 60,000 years. The *Brahmanda Purana* states that during the years of *Simhastha*, all the rivers and centres of pilgrimage are concentrated in the Godavari. The *Simhastha* occurs once in twelve years and

even at present, pilgrims throng in thousands at Nasik to bathe in the river.

The river prominently figures in the *Ramayana*, for, Rama, during his exile, was staying on its banks. Valmiki is also said to have received inspiration to compose the epic here only. Rama lived in a hut (*parmakuti*) about 35 kms from Bhadrachalam which is therefore held sacred. He is also said to have performed the *Shraddha* ceremony of his father on the banks of the Godavari, as the river was sacred. The *Ramayana* (*Aranyakanda*) describes the river as full of lotuses and swans and antelopes freely moving along its banks. Lakshmana took bath in this river. The *Mahabharata* has reference to Sapta-Godavari (Ch. 85). It is highly likely that the reference is probably to the tributaries as in the case of the Indus.

The river is referred to in several *Puranas* such as the *Bhagavata*, *Matsya*, *Padma*, etc. and because of the puranic and epic association, there are several places of pilgrimage on it. The *Brahmanda Purana* gives their number as one hundred. Besides Nasik and Tryambakeshwar, Paithan, Dhavaleshwaram, Govardhan are some of the important centres of pilgrimage. Narada is said to have lived at Dhavaleshwaram where people show the footprints of Rama and Sita on the rock and hence its religious importance.

The Godavari is also mentioned in the Buddhist and Jaina literature. If literary evidence is accepted, we can say that the earliest centre of Buddhism in South India was in the Godavari valley. According to a story in the *Suttanipata*, a brahmin named Bavari went from Maharashtra to north India, met the Buddha, and was converted to Buddhism. On return, he founded a monastery on the banks of the Godavari in Maharashtra. Several Buddhist sites of the later period have been found in the Godavari valley, and among them the group of 26 Buddhist caves at Nasik, locally known as 'Pandu Lena', are well-known.

The literary references are numerous and all need not be recounted here. But, one of them from Jaina literature, is most interesting. It brings the river Godavari to testify and asks her whether it is a fact that the balance of the earth is maintained only because there is the Himalayan mountain in the north and the Satavahana King in the south. This is a very fine allegory to underline the prowess of the Satavahana ruler (*Brihat-Kalpa-Suba-Bhashya*, VI).

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In later literature and history, the river figures prominently. This only goes to emphasise its important role in the evolution of cultures that flourished along its banks. The Godavari valley is one of the areas of attraction in the country as it is known for its fertility. This is mainly because of the rich black cotton soil in the valley which is watered by the river and its tributaries. This fertile tract is spread over 200,000 sq kms. The major tributaries are Dharna, Indravati, Mula, Wardha, Wain-ganga, Pranahita, and Sabari. After its confluence with Godavari, the river reaches

Bhadrachalam, where it is about 7 kms wide. It is here that she is divided into two streams, the Gautami Godavari and the Vasishta Godavari, of which the latter name is explained by the legend. Further east, another stream is formed, named Vamattya. Here is an island in the river called Amalapur where pilgrims take bath only on Sundays. There is a Siva temple at this place and the *Linga* is said to have been brought by Garuda from Narmada. With several places of pilgrimage, the Godavari has been rightly referred to as the Dakshina Ganga.



The Riverine Glory That is Reva

R N SAMPATH

Any civilization the world over from time immemorial has been that of a riverside one. In India, the earliest recorded civilization is that of Vedic which is authentic even though the excavations at Harappa, Mohenjo-Daro and other places are still disputed points. The Vedic civilization in India grew out of forest culture. In other words, the life in that period was in harmony with Nature. The flora and fauna was not thought of by men as things meant for his conquest and subjugation but only as help-mates. Out of this attitude a temperament has arisen to consider even inanimate objects as partners in the scheme of worldly existence.

The rivers in India have been treated with utmost esteem and respect and called as "mothers" as they cater to the needs of agriculture which was, is and will be, the main industry in India. The lands that are to be drenched and watered for the growth of wheat, paddy, millets and other varieties were branched into two segments. They are *Deva-matrika* and *Nadi-matrika*, the former being fed by Divine Will, that is rain, and the latter fed by rivers. The rivers in India flow by and large towards the east and join the Bay of Bengal whereas a few flow westwards and mix with the Arabian sea. The Sanskrit term for the east flowing ones is 'Nadi'—a feminine word and the west flowing ones are called 'Nada'—a masculine one. The Nadis are supposed by popular opinion more efficacious spiritually also.

Reva

The river in question in this article is Reva. It is also called by other names—Narmada and Mekalakanyaka. Mythologically, almost all the rivers are considered to be the divine daughters of celestials or sages.

The term Reva is very significant. The word means that which runs (flows) with hops—*utplutya gacchati it*. Though this river flows westwards and joins the Arabian sea it is known as *Nadi* and not *Nada*. The Maikal range is the source of this river and also for Mahanadi which flows east. This region in the mid-Vindhya series is known as *Mekalaranya* the abode of Mekala rishi. In the Puranic period they might have observed the two rivers as one flowing from west to east and hence termed it as *Nadi*,

The Course

Geologically, this river must be older to many rivers, as the Vindhya ranges are considered even older to Himalayan ranges. Perhaps at one time the river might have flowed from west to east as if bifurcating the *Bharata Khanda* itself. And in the Puranic period, the two courses could have been clear-cut due to geological and geophysical changes and the emergence of two rivers as Narmada and Mahanadi.

The course westwards has left the mountainous regions and formed deep ravines in the central regions around Bastar locality and hence perhaps the name Reva. At Hoshingabad off Itarsi, the river is accessible for bathing. Hence the adage in Sanskrit *Gangasnana, Tungapana and Revadarsana*. What effect (spiritual) one will have if he has a dip in the river Ganga, the same can be obtained by sipping a drop of Tunga water or by seeing the river Reva that is Narmada.

This river has been the seat of spiritual life for a long time. Many were the great habitations that arose on her banks. Though references are lacking in Vedic literature about this river, in classical literature and in Buddhist and Jain lore, the river finds a very good treatment.

References in Literature

Kalidasa mentions this in his *Meghasandesha* as Reva only. Similarly *Navasahasanka carita* (early 11th century) mentions not only the Reva border Narmada but also the mountain, Mekala. *Prithviraja Wjaya* (12th century) mentions Reva as descended from the moon. *Salubhyudaya* (15th century) contains the reference as the King Narasimha who, after getting exhausted in hunting, reached the banks of River Reva (8th century).

But the references regarding this river in the *Itihasas* and *Puranas* are immense. Matsya, Vamana, Brahmanda, Markandeya, Vayu, Vishnu and a few others make pointed reference to this river as Narmada and her regions to detail the habitations—*janapadas*. In *Bhagavatam* also a reference is made. It is in the course of mentioning the sacred rivers of Bharata country. The list contains both the names—Reva and Narmada as two distinct names. In *Skandapurana* there is a separate chapter called

Reva Khanda In that, the genesis of the river is given According to that account, the river is born out of Lord Siva's *Sarira*, while Siva performed a severe penance when sweat particles came out of his body profusely and formed a stream which in due course became the river Narmada The Sivalinga is supposed to have originated in the Reva river *Padmapurana* has a separate chapter to deal with the topic of Narmada river which will be reconsidered after referring to the mention of this river in the *Mahabharata*

On three occasions, Reva or Narmada has been talked about In the *Salva Parva*, Narada describes the Varuna sabha and in that context the river Narmada is mentioned as joining the west sea, as Narmada *Vegavahini*—river Narmada which flows very fast In *Vana Parva*, in the context of *punyatirthas* the reference to this river as *Pratyaksrota*—west flowing and also a rendezvous for the Siddhas and Rishis to take their holy bath Bhishma refers to this river with all respect and says it is the seat of *Visravas*—one of the sons of Brahma In the *Anusasana Parva*, it is referred to as Devanadi, with cool waters that redeem a sinner from all his sins

In the *Adhikhanda* (*Srishti*) of *Padma Purana*, a detailed account of the *Punya tirthas* is expressed in which Narmada Nadi too features The first ever *Tirtha* is *Pushkara* (near Ajmer) and Narmada is no less significant The thirteenth *Adhyaya* of this book (*Khanda*) has 54 verses singing the glory of river Narmada Dilipa was told by Vasishta that Ganga is sacred at Karekhala (near Haridwar) and Sarasvati river at Kurukshetra but in the case of Narmada any spot in the course of this river is equally sacred In the neighbouring hill of this river is the presence of *Rudra Koti*, i.e., a crore of *Rudras*

The *Amarakantaka* now known as *Amrakoota* is a sacred spot on this river wherein thousands of *Tirthas* are supposed to be present The river

basin accommodates a number of Siva temples on either side of the banks In fact, the *Adhikhanda* mentions about Narmada in glorified terms and as Siva ever present in one form or other

As such a *janapada*—a habitation could have been there from a very early time of history Inscriptions also record that the Chola King Rajaraja brought *Brahmanas* from Narmada region to his capital city and placed them in *Brahmadeyas*—*srotryam* villages for the sustenance of Vedic functions and study Apart from this, the mention of River Narmada or Reva is to scare the purpose of a talisman against poisonous snake bites All this belief is perhaps due to the fact that Siva is considered to be the source of the waters of this river or Siva in the *Ap* form sports in the river Narmada

Notwithstanding these spiritual elements, associated with this river, she has had her share in the economic prosperity of the region too At the estuary of this river with the sea, there is the port town Baroch today It was once a famous emporium for the West in their interest towards the east Its name then was *Bhrigu Kaccha* Almost all the *Puranas* mention about this *Kaccha* In Buddhist texts and also in Jama literature the place is known as *Bharu Kacchaha* or *Bharuya Kacchaya* The distance between this place and Ujjain was only 25 yojanas Goods were carried by land routes and water routes to this sea port So the river might have been navigable up to a considerable distance up the stream Authors *Periplus* and *Ptolemy* mention this place as *Barygaza* which was a commercial centre From these accounts it becomes clear that the port town *Bhrigu Kaccha* was a western gate of India to the east and also an opening for the formation and formulation of Greater India

River Narmada is to bestow *sarma*—goodness and auspicious blessings to all



The Enchanting Narmada

DR N GANGADHARAN

It is well-known that civilisations have flourished on the banks of the rivers. It is because of the paramount importance of water for the sustenance of human beings. Moreover water has been held in high esteem by the followers of Hindu religion. A stroll in a flower-garden, a trip in a river, an ascent to a hill top, always broadens the heart and tends to make it sincere. Even among the different kinds of water, such as rain water, flowing waters and stationary water, the second one is given a second position. Even among the rivers that flow on our land, certain rivers are considered to be extremely holy. The following couplet explains this concept.

*Gange cha Yamune chavva Godavari Sarasvati/
Narmade Sindhu Kaaveri Jalesmin Sannadhin
Kuru||*

(The rivers Ganges, Yamuna, Godavari, Sarasvati, Narmada, Sindhu and Kaveri are invoked to be present in the waters kept in a vessel to be made use of in the worship of any God)

The river Narmada is known to be one of the rivers that is hallowed. The following verse is recited by some people while offering their twilight worship conveying their obeisance to Narmada seeking protection against poisonous serpents.

*Narmadaayan Namah Praatah Narmadaayan
Namo Nishu |
Namostu Narmade tubhyam traahmaam Visha-
sarpatah ||*

(The above verse suggests to some extent that the region through which the river Narmada flows abounds in thick forests). It stands as one of the longest and holiest rivers of India as it flows for about 801 miles across the country and has numerous shrines on its banks. The *Matsya-Purana* glorifies it in unambiguous terms as follows.

*Punya Kamakhale Ganga Kurukshetre Sarasvati |
Graame Vaa Yadi Vaaranye Punye Sarvatra
Narmada || 186 10*

(It means that the river Ganges is sacred at Kanakhala and the river Sarasvati at Kurukshetra, but the river Narmada is sacred everywhere, whether it be in a village or a forest). It has another noteworthy fact that it is one of the few rivers whose potentiality has not been fully tapped. Although we do not find it mentioned in the *Vedas*, the *Mahabharata*, the *Matsya*, *Padma*, *Kurma* and *Skandapuranas* describe its origin and greatness. The *Mahabharata* describes the holy spots on its banks in the *Vanaparva*. The fifth section of the *Skandapurana* is known as the *Revakhanda* dealing with the greatness of the river and other holy spots on its banks, its origin, etc.

The *Skanda Purana* (V 4 46-49) glorifies the river as flowing in fifteen streams with the following names: Sona, Mahanada, Narmada, Surasakruti, Mandakini, Dasarna, Chitrakuta, Tamasa, Vidasa, Karabha, Yamuna, Chitrot-pala, Vipasa, Ranjana and Valuvahini. The terms Reva and Narmada are generally taken to be synonyms and the *Revakhanda* of the *Skanda Purana* describes them as one and the same. But the *Bhagavata* and the *Vamana Puranas* mention the two names separately. But scholars point out that the two separate streams of Reva and Narmada meet near Mandla and thereafter the two names are indiscriminately used for the river. It is sanctified also as the Dakshinaganga.

Origin as described in the Puranas

The *Revakhanda* of the *Skanda Purana* has the following legend describing it as the daughter of Rudra. Lord Siva was once practising penance in the company of Goddess Uma on the Riksha mount. The perspiration from his body began to flow into a stream and it assumed the form

of a beautiful damsel and then worshipped Lord Siva. He blessed her that she would be holy. Hence Narmada is known as the daughter of Rudra and not born of the womb. Being attracted by her beautiful form the Gods began to move after her. Lord Siva declared that only the strong and lustrous among them would be able to have her. The moment they came near her, she used to disappear. She was seen by them in different forms. But no one was able to catch her. Lord Siva was delighted to see her movements. Because she was giving delight she was called Narmada. We can understand the significance of this name from its rugged course in her initial stages. Finally she came near Lord Siva. Those who were running after her had to retire. It is said that Lord Siva finally gave her in marriage to the ocean.

Its Course

The river rises in the Maikal ranges in Central India on the east of Vindhya and Satpura ranges. Hence she is known as the daughter of the Maikal. As Reva, she starts from a place called *Amarakantak* at a height of about 3,500 feet. About four miles from its source, at Kapiladhara, it falls about 70 to 80 feet down. The sacred waters of the Narmadakund, the source of the river Narmada and the Narmada Mai temple in it are the greatest attractions for the devotees. Although pilgrims visit every day, a great congregation could be seen on the occasions of Sivaratri, the full-moon days in the months of *Magha* (February-March) and *Vaisakha* (April-May). The *Padma Purana* (Adi ch 15) as well as the *Skanda Purana* (Reva ch 28) describe the legend of Bana and his three cities. With the various gods becoming his implements Siva made preparations for the war. Lord Siva struck the three cities with his arrow. Bana prayed to Lord Siva and requested that the linga in his possession should not get destroyed. Lord Siva granted him a boon. While the two other cities were burnt the third city was saved. One of the two burnt cities fell at Srisaila and the other at Amarakantak.

*Ekam tu patitam tatra Shrishaila Khandamut-
taram |
Dwiteeyam patitam Rajan | Shaila Hyamara
Kantake ||*

—*Skandapurana*, V. 28, 108-9

—*Padma Adi*, 16.68

After leaving Kapiladhara, she passes from the rugged hills of Mandla and has another descent of 30 feet at a distance of about 200 metres near Bhedaghat near Jabalpur known as Dugdhadhara falls. A zigzag foot-path through

a maze of huge rocks leads to the site. The Narmada with its cool and crystal clear waters here surges through a small opening and is lost in the hills beyond. It moves through the rocks of marble and flows in the valley in between the Vindhya and Satpura ranges for about 500 miles. Near the banks of the river many parts of the hills contain dense forests. For about 200 miles further up to the town of Handia, the river stretches itself into a great basin. Then she passes through Malwa and reaches Gujarat after covering 180 miles further up to Haranfal. Further up to Makrai she moves rapidly for about 80 miles and she passes through the plains of Gujarat for about 100 miles until she reaches the Gulf of Cambay. We may even call her as the greatest river of Gujarat.

Visitors to Amarakantak may reach Allahabad, Jabalpur or Satna by train or plane and then travel by train to reach Shahdol, Anuppur, Burhar or Pendra on Katni-Bilaspur section of the South-Eastern Railway. Visitors have to change trains at Katni to reach Amarakantak. Regular buses ply between these places and Amarakantak. Bhedaghat is easy to reach as it is near Jabalpur and is linked by motorable road. One can also easily reach here from the Bhedaghat railway station on the Jabalpur-Itarsi section.

It is said that during the entire course, the Narmada makes 35 confluences known as *Sangamas*, eleven of them on the northern bank and twenty-three of them on the southern bank. The 35th confluence is the one with the sea that is deemed to be the best. It may be noted that the major part of the river flows through Madhya Pradesh only. Only the last 170 miles of its course before it merges into the sea lies in the Gujarat State forming as a line of demarcation between the States of Maharashtra and Gujarat. Her main tributaries are Kaveri, Amaravathi and Bhukhi. The other tributaries are Banjar in Mandla, Sher and Shakkar in Narsinghpur, Tava, Ganjal and Chota Tava in Hoshangabad districts and Hiran in Jabalpur district. Near Broach (in Gujarat) her breadth is about a mile. After Broach as she proceeds to the sea, the river widens out into an estuary and her breadth is about 17 miles.

The enchanting Narmada has to be crossed by the travellers from Madras to Delhi or vice-versa and one cannot miss the instruction at the Hoshangabad railway station informing the people that they have to alight there if they want to bathe in the river Narmada. Hoshang was a famous Afghan ruler and the place was renamed after him.

Among the other well-known spots on this river, we may mention the famous Omkareshvar (Mandhata), Barwani, Karnali, Suklatirtha and Broach

Omkareshvar

The famous temple of Omkarnath, worshipped as one of the twelve *pyotirlingas* of Lord Siva is situated about 7 miles from Mortakka, on the island of Mandhata on the bank of the river Narmada. It is stated that emperor Mandhata of the solar race in the Satyayuga worshipped Lord Siva at this place. The island of Mandhata is situated between the rivers Narmada and Kaveri. The name Kaveri is different from the well-known river flowing through Tamil Nadu. This place is also known as Sivapuri. Every year, there is a religious festival here on the full-moon day of *Karttika*. From the hymn on the twelve *pyotirlingas* we know that there was another Sivalinga here known as Amaresvara. The river Narmada is famous for the *Banas* of Lord Siva. *Banas* are held to represent Lord Siva just as the *saligramas* for Lord Vishnu. It is stated that one would get as many of these as there are stones. One would get *Banas* of Siva with the signs of three eyes and a sacred thread within a few miles from Omkarnath. They are usually called Narmadesvara.

The legend about Omkareshwar is as follows. The sage Narada was worshipping Lord Siva on the Vindhya mountain. When the Vindhya mountain appeared before him and boasted that there was no other mountains like him in the whole world, Narada refuted his claim at once saying that Mount Meru was bigger than Vindhya. Vindhya shed his vanity and performed penance on the banks of the river Narmada. Lord Siva blessed him after being pleased with him. At the request of the gods and sages, Lord Siva appeared to bless Vindhya. The *Skanda Purana* (V.29.39) sings the glory of this confluence here:

*Gangaa Yamunasange var yatphalam labhate
narah |*

*Tatphalam labhate martyah Kaaverisnaanam-
aacharam ||*

Maheswar

This place situated on the banks of river Narmada gained importance under Rani Ahalya Bai Holkar of Indore. She constructed many temples, buildings and ghats here. Three kilometres away, at Sahasradhara, the Narmada splits into a picturesque waterfalls.

Although Mandu is not situated on the banks of the river Narmada, it deserves to be mentioned on account of its historic and romantic importance. The last of the Malwa Sultans, Bayazid, popularly known as Baz Bahadur, ruled from 1554 to 1564 A.D. He was extremely fond of music, hunting, fine arts and romance. Once he happened to hear the sweet voice of the beautiful and accomplished lady, Rupmati of Sarangpur and fell in love with her. Rupmati, being an orthodox Hindu lady, resisted his offer of marriage for sometime. But ultimately she agreed to his proposal only on a condition that Baz Bahadur should bring river Narmada to the hill fort of Mandu. Baz Bahadur spent an enormous amount and is said to have brought the current of water about 1,200 feet high in the Mandu Fort and constructed the Rupkund for Rupmati. She married him in 1557 A.D.

Chandod

Chandod is famous for the confluence of the river Or nearby Chandod. It is stated that Sukadeva, son of sage Vyasa, renounced the world when he was just a child. Vyasa ran after him to persuade him to come back. Vyasa then performed a penance near Chandod, while Sukadeva was on the other bank. There is a temple of Vyasa about eight miles from Chandod in an island in Narmada. There is a temple of Sukadeva to the south of Vyasa temple. The temple of Anasuya is about 4 miles away.

The town of Karnali famous for learned *vaidikas* and *sannyasins* is on the other side of the river. Further on, there is a temple of Kumbhesvara Mahadeva and the temple of Saturn. People afflicted by Saturn propitiate Saturn here. Further east there is a temple of Surpanesvara, in the midst of a jungle, on the northern bank of the river. Suklatirtha is an important place of pilgrimage in the west. There are three *kundas* here,—Kavi, Omkaresvara and Sukla. There is a religious festival here on the full-moon day in *Karttika*.

The famous town of Broach associated with the sage Bhrgu is about ten miles from the *Suklatirtha*. The Dasasvamedha ghat at Broach is specially considered holy.

It is stated that pilgrims undertake the pilgrimage of going round the river starting from Broach and reaching Amarakantak walking along its bank and returning by the opposite bank.



TAPI OR TAPTI

between the towns of Burhampur and Zambad and then passes into Khandesh region of Maharashtra

After entering Khandesh, it receives the Purna on the left bank from the Berar hills. It flows nearly 240 kms through a broad and fertile valley bounded by the Satpuras and the Satmalas on the north and south. Then the hills close in and it descends through wooded country for about 96 kms. After that it swirls southwards to the Sea through the alluvial plain of Surat district, becoming tidal for the last 48 kms of its course.

The rivers of India are classified under ten groups. They are 1 Indus group, 2 Sarasvati—Drishadvati, 3 the Ganga-Yamuna group, 4 the Brahmaputra—Meghna group, 5 the Lunj—Chambal group, 6 The Narmada—Tapti group, 7 the Mahanadi group, 8 the Godavari group, 9 the Krishna system and 10 the Kaveri system.

The Tapti is one of the twin rivers of Central India, the other being the Narmada. Tapti is one of the major rivers of western India, especially of Gujarat. The name is derived from *tap* (sweat) and the Tapti is said to have been created by the Sun to protect himself from his own heat.

The Source

Tapti or Tapi has its source in Multai plateau to the west of Mahadev hills and flows west and meets the sea at Surat. *Padma Purana* states that the river Purna, a tributary, rising in the Satpuras, meets this river below Burhampur. The Girna river rises in the western ghats and joins the Tapti below Chopda in Khandesh. The other tributaries of Tapti are the Bori and the Panjhra.

It rises from the sacred tank Multai or Multapi on the Satpura plateau. It flows towards west through the Betul district. The first course of Tapti traverses an open and partially cultivated plain and then plunges into a rocky gorge of the Satpura hills between the Kalibhit range in Nimar and Chikalda in Berar. The Nimar region is 192 kms away from the source of Tapi and entering this, it flows in a narrow valley for 48 kms.

Its Route

The river valley opens out a few miles above Burhampur and becomes a fine rich basin of alluvial soil of about 32 kms width. Tapti flows

Tributaries

Its tributaries are small since it runs near the foot of Satpura. But after the meeting with the Purna, it receives through the Girna, the drainage of the hills of Bagalon, and through the Bori, the Panjhra and the Bora from the northern buttresses of the western ghats. It receives thirteen principal branches through Khandesh.

References in Epics

Though some scholars identify the Tapti with the river Pavoshni and Purna, the *Puranas* mention Tapi and Pavoshni separately.

The *Mahabharata* and the *Bhagavata Purana* mention the river Tapi as the daughter of Sun-God or Vivaswan. Apart from bathing (*snana*), drinking (*pina*) and seeing (*darsana*) it expunges all sins even if one chants (*smarana*) the name of Tapti says *Tirtha Prakasa*. One will attain *moksha*, if he leaves his physical body on the banks of this river.

There are about 108 famous *tirthas* mentioned on the banks of the Tapti. The city of Bhusawal where the Tapi and the Purna join, an ancient famous temple of Changadeva is situated. Abul Fazal calls this as Jigar tirth, which Hindus consider as the most sacred of the holy places.

Sacred Spots near the River

The sacred place Prakasa, twenty-five miles away from Dhulia, is situated at the confluence of Tapi and its tributary. The temple of Gomateshwara Mahadeva is situated to the east of Dhulia, where a religious festival is held every twelve years when Jupiter enters the Leo (Simha). There is another temple of Sangameshwara Mahadeva between the two rivers.

Several ancient *tirthas* are mentioned in *Tapi Mahatmya*, viz., Dharieswara in the village

Dharoli, Mukteshwara in Mota Ganmateshwara in Bahuchham (Bodham), Koteshwara in Kamalaj or Kamrej, Kshipravata in Kholvan, Ambaishwara in Abrama, Ashvi tirtha in Ashvin Kumar near Surat, Kantaishwara in Katargam near Surat, Gupteshwara in Phulpada near Surat, Varitapya tirtha in Variyav, Rameshwara at Ramanath Ghela near Surat, Darbheshwara in Narsana, Jaratkareshwara in Mora near Hazira, etc

The *Tapi Sagara Sangama* is a holy spot near Hazira. A bath in this *sangama* on a new moon day of the Margashirsha month and a *darshan* of Lord Nageswara and Jaratkareshwara are considered holy by visiting pilgrims.

The first chapter of the *Tapi Mahatmya* elucidates all these 108 sacred places as the temples of Lord Shiva on the banks of Tapti. The second chapter gives various names of this river including Tapi, Takmi, Savitri, Naasatya, Amrtasvandini, Sarpavisapaha, Taaraa, etc. Tapi is called the daughter of the hills, the queen of forests. The river Tapi is culturally more important, so our forefathers have exalted it to the zenith of *smarana*. But the river has its own historical value apart from its religious and cultural sanctity.

The famous historic fort in Thalner in Sirpur district of west Khandesh is situated on the banks of the Tapti. On the right bank of the river, the ancient town of Rander, one of the ancient cities of south Gujarat, is situated. The ancient and historic city of Surat is situated on the southern bank. The trade centre Phulpada referred to by Ptolemy is a part of Surat. The Hindu fortress at Kamrej is also an ancient one that flourished in the past. The sea port at Suvali is on the mouth of Tapi which was a famous port during the days of the Moghuls and the early days of European traders.

Serving the Irrigational Needs

The Tapti and its tributaries are not uncommon for floods. To check the catastrophies and to irrigate about 800 thousand acres in Surat,

the Kakrapar dam has been built which is 2,039 feet long and fifty feet high. This irrigates an area of 5,62,000 acres and gives a possibility to crop twice. The Ukai project will also generate hydro-electric power and one of the projects is also a multi purpose one.

A large number of mineral springs, (both thermal and cold) from the underground reservoirs of water, occur in our country. Both thermal and cold contain molecular quantities of salts in solution, which are used externally (for bathing) and internally (for drinking) as medicinal water. Some of them are efficacious in curing some physical ailments.

Several springs like Devaki Unai are found in Surat district, Gujarat. Similarly thermal springs are those that emerge in the Deccan Trap on the Tapi valley due to disturbances in the tertiary era.

The sanctity of Indian rivers is not only based on geographical, physical, geological, historical, cultural and religious factors but also since most scientific theories propagate the utility of mineral springs. But the seers of the past also proclaimed that man is elevated not by merely visiting the *punyakshetras*, not by worshipping any *Ishta Devata*, but by realising the *Atman* which is eternal and ubiquitous.

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The Yamuna—A River of Smiles and Tears

Yamuna—Its Confluence with Ganga

Yamuna, also known as Jumuna, the famous river of Northern India, is an offspring of the Himalayas. It rises from the Yamunotri glacier in Tehri Garhwal district of Uttar Pradesh at an elevation of 5,330 metres above the earth's surface. It is joined by the Rushuganga, the Uma, the Hanuman Ganga, and several other mountain streams. Tons, its longest tributary, rises at an elevation of 3,900 metres and joins the Yamuna, below Kalasi. The Giri brings its waters from Himachal Pradesh and joins the Yamuna in the Dun Valley. After emerging from the hills near Faizabad in Saharanpur district, Uttar Pradesh, it traverses a distance of 1,376 kilometres and merges its clear blue waters with the greyish and muddy waters of the Ganga in a very graceful way at Allahabad in Uttar Pradesh, and merges its identity with the Ganges. This grace and beauty of meeting has been depicted by Kalidas, the great Sanskrit poet of ancient India, in memorable words

"When the waters of the Ganga and the Yamuna mingle, it appears as though diamonds and sapphires were woven together in a string, as though a flock of white swans had suddenly run into another flock of black swans, as though a garland of white lotus buds were interspersed with blue lotuses, as though streaks of lightning had merged into a sheet of darkness, as though a clear blue sky were spotted with woolly clouds of autumn."

But, once when the Yamuna merges itself into the mighty Ganga, it does so as the smaller streams and rivers had joined to add to its splendour and proceeds towards the ocean, linked in eternal embrace. This confluence of the Ganga and the Yamuna is famous by the name of *Triveni Sangam*, or the confluence of three rivers.

It is said and believed that another river, Sarasvati, also joins them here Allahabad, the ancient Prayag, where the confluence takes place, has a great religious importance. It is said that King Harshavardhana accompanied by Hiuen Tsang, the great Chinese scholar, visited Allahabad in the month of *Magh* (January-February) and after bathing in the sangam,

he distributed his wealth, including his personal jewels and garments, to those who assembled there. Centuries have passed, but the bathing in the holy waters of the Sangam, particularly in the month of *Magh*, has a particular religious significance. On this occasion, the *Magh Mela*, crowds of pilgrims of all ages, ranks and areas, pour into this place. People wearing varied dresses, speaking different languages and belonging to different classes and societies assemble here to represent a miniature India. It looks as if all have been tied together with an unseen thread of cultural bonds. Every twelve years, the *Magh Mela* becomes the *Kumbh Mela*.

According to Hindu tradition, Brahma's son, whisked away the Jar (*Kumbh*) of nectar thrown out by *Kshi Samudra* the Ocean of Milk, when it was churned by the gods and their opponents, the demons. A few drops of nectar dropped at Prayag, Hardwar, Nasik and Ujjain. The jar was finally saved by Brahma's son who was chased by the demons and handed over to the gods. Though *Kumbh* festival is celebrated at all the above four places, a special significance is attached to Allahabad where millions gather to have the traditional ritual of bathing at the Sangam.

Source of River Yamuna

Yamuna, in the remote past, took birth in the Yamunotri glacier, situated 10 kms. west of the high Himalayan peak called Bunderpunch. This lofty peak according to legend, took this particular name, because, Hanuman, the monkey-god, after burning Lanka with his tail, extinguished the flame on his tail here. Yamunotri is covered with snow in winter but it can be reached in summer, especially, during the months of May-June. Yamunotri is a place of pilgrimage and has a temple where the Yamuna in the form of a handsome maiden and standing on a tortoise, is the deity. At Yamunotri, the water of the Yamuna, is very chilly but nature has been very considerate in providing a number of hot springs in its bed itself. Several bathing pools have been constructed round these hot springs and the pilgrims can mix hot water with the cold and enjoy their baths. A pilgrim

has to start from Rishikesh near Hardwar by road to reach Dharasu, from where the distance of 76 kms has to be covered on foot or on ponies or in palanquins. Arrangements for daily needs of pilgrims exist *en-route*.

Its Course

Leaving the hills behind, the Yamuna enters the lovely Dun valley between the outer Himalayas and the Siwalik hills. The valley is flanked on the west by the Yamuna and on the east by the Ganga. Flowing south-west and forcing its way down the Siwalik hills, the Yamuna enters the plains of Uttar Pradesh at Paonta where Guru Govind Singh built a *Gurudwara*. It passes through Faizabad (Saharanpur) and then flows for 104 kms in a south-south-westerly direction. Near Bidauli in Muzaffar Nagar district of Uttar Pradesh, it turns due south and then south-east to reach Dankaur where the river, Hindon, meets it and increases its volume. From here, it runs 800 kms parallel to the Ganga, creating the fertile Ganga-Yamuna Doab. During its flow from Faizabad, it passes through Delhi, the capital of India, Mathura, Agra, Ferozabad, Etawah, are on its banks. Chambal, Sund, Betwa and Ken, its tributaries, meet it on the way to Allahabad (Prayag). It just by-passes Bundelkhand.

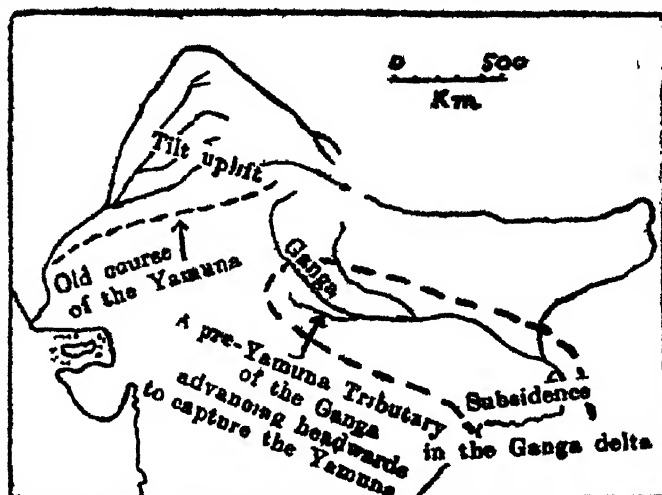
The Yamuna Basins

There are two main physiographic divisions of the Yamuna Basin: (a) The Himalayan Basin, having a catchment area of 8,280 kms consisting of rugged relief, transverse ridges, spurs and dales of the lesser Himalayas draining the districts of Uttar Kashi, Tehri and Dehra Dun in Uttar Pradesh and Mahasu and Sirmur districts of Himachal Pradesh and (b) The plain Yamuna Basin having a catchment area of 297,300 kms, consisting of generally the plains and draining the States of Haryana, Delhi, Uttar Pradesh, Rajasthan (Chambal Basin) and Madhya Pradesh.

On the east, a transverse spur extending southwards from the main Himalayan Range to Chham Bamak, Darwa, Thadol and Nag Tibba, separates the Himalayan Yamuna Basin from the Bhagirathi Basin. In its north, it is a highly dissected region consisting of several antic lines of normal and fan-shaped types and labyrinth of criss-cross valleys. The Yamuna plain Basin has six sub-sections: (a) from the debouch near Kalesar to Bidauli in Muzaffar Nagar—118 kms; (b) from Bidauli to Delhi—128 kms; (c) from Delhi to Mathura—170 kms;

(d) from Mathura to Agra—64 kms; (e) Agra to Mau to Banda district—696 kms; and (f) from Mau to Allahabad—72 kms. The plain Basin is very fertile and thickly populated. Three canals have been taken out from the Yamuna to irrigate the land. Several prosperous and big cities were on its banks.

Shift of Yamuna from Indus Drainage to the Ganga Drainage



From Post-mid-Miocene to Recent Age, the Yamuna belonged to the Indus Drainage System.

In the Sub-Recent Age it has become a member of the Ganga Drainage system.

It is now held that the Yamuna belonged to the Indus Basin till the recent age. Sarasvati, the invisible river at the confluence at Allahabad, is held to have been a twin stream with the Yamuna, having its catchment between that of the Yamuna and the Sutlej and which debouches from the Siwalik hills near Nahan, east of Ambalaa. Both the Yamuna and the Sarasvati are believed to have flowed southwards to combine near Suratgarh, north of Bikaner and then continue their journey as Ghaggar (Hakra) through Bahawalpur, to join the Indus. The book *Mountains and Rivers*, published by the National Committee of Geography, Calcutta, 1968, while writing of this shift of the Yamuna to the Ganga Basin says, "The dry bed of Ghaggar is still existing in the areas of Bikaner and Bahawalpur, the flat bed is 3 to 6 feet wide, bordered on either side by steep acolian dunes covered with brushes and thorny scrubs." How the Yamuna became a tributary of the Ganga is also explained in this valuable work. It says, "Due to a subsidence in the Ganga delta, a pre-Yamuna tributary of

the Ganga, began working headward actively to catch the stream of the Yamuna and subsequently, the drama was completed by a later uplift in the Aravalli-Delhi axis as well as the gradual rise of the Escene Sea floor of the Rajasthan desert". C S Fox, ex-Director, Geological Survey of India, supporting the said view said, "No great chance of water-shed has taken place in this region since the Jamuna was captured by the Ganges."

The Yamuna Canals

Water, brought by the Yamuna from the Himalayas, is mostly drawn by the Yamuna irrigation canals. Channels have also been cut out from its tributary streams of Chambal, Betwa and Ken to irrigate the field terraces around, scattered hamlets or villages in the Himalayan area. These are called *Kuls*. The bulk of the Yamuna water is taken by the canals in the plains below the debouch near Faizabad in Saharanpur district. There are three irrigation canals in the plains—The Eastern Yamuna canal, The Western Yamuna canal and the Agra canal.

The Eastern Yamuna canal was constructed during the reign of the Mughal Emperor, Mohammed Shah (1719-1748), since when, it has been extended and improved. It was repaired and re-modelled by the British in the early 19th century. This canal takes off from Tajewala near Faizabad in Saharanpur district and a permanent regulator has been constructed there. It irrigates lands in Uttar Pradesh, mainly the districts of Saharanpur, Muzzafar Nagar and Meerut. Its length is 206 kms and it irrigates a gross area of about 200,000 hectares every year.

The Western Yamuna canal was constructed in the reign of Feroz Shah Tughlak (1351-1388), to carry the Yamuna water to his hunting seifdom, in Hissar district. After his death, it fell in disuse. Akbar (1556-1605), restored it in 1568. It was later improved by Shahjahan and a branch canal was taken to Delhi to supply water to the fountains and gardens in the Red Fort and to adorn the streets of Delhi. With the decay of the royalty, it also declined. The British engineers, in the 19th century, reconstructed the Western Yamuna canal which is fully developed and irrigates a gross area of 532,600 hectares of land every year. Its head-work is at Tajewala and the area irrigated is of the districts of Ambala, Karnal, Hissar, Rohtak and Delhi.

The Agra canal takes off from the Yamuna near Okhla, in Delhi. It has been recently constructed and is 267 kms long and irrigates a gross area of 167,450 hectares.

The Doon canal from the Yamuna, the Tons and the Son, is 35 kms long. It is not a plain canal, and irrigates a gross area of only 11,280 hectares, every year.

Religious Importance of Yamuna

As the ancients loved to personify nature, the Yamuna was also portrayed as a comely maiden. According to Hindu tradition, Yamuna is the daughter of the Sun and sister of Yama, the god of death. She is thus venerated as a goddess by Hindus and called Jumunaji. Ptolemy the famous astronomer, geographer and mathematician, refers her as Diamouna while Pleny the Roman Savant, called her Jomanes. Many call her as *Kalindi Kanya* or *Kalindi* as the Yamunotri glacier is also known as *Kalindi Parbat*.

The Yamuna's religious importance is further enhanced by it being a tributary of the Ganges which has great religious importance of its own. Its importance as a holy being is also established on account of Mathura which is situated on its bank. Excavations from an old mound here prove that it is the remains of at least two Buddhist monasteries of an early date. Fa Hien refers Mathura to be a centre of Buddhism. Huen Tsang says that it contained 20 Buddhist monasteries and 5 Brahmanical temples. On the top of it, Mathura is associated with Lord Krishna Brindavan, where Krishna passed his childhood and Mathura, the place of his birth, add to the religious importance of the Yamuna. Last, but not the least, its Sangam at Allahabad referred to earlier, has made it a deity for posterity to worship her as a goddess.

Politico—Cultural Importance of Yamuna

The area on the west and east of the Yamuna, is famous for the cultural evolution in India through all the ages. Mauryas, Guptas, Harshas, Muslim Sultans, Mughals and the British, all had their day in this region. Kurukshetra, Thaneshwar, Karnal, Panipet and Delhi belong to this area where all decisive actions—the Mahabharata War, the three battles of Panipet, the battles between the Muslim Sultans and the Rajputs and the war between the British and the Sikhs took place. The culture of the vanquishers merged with that of the vanquished to make the culture of this region, rich.

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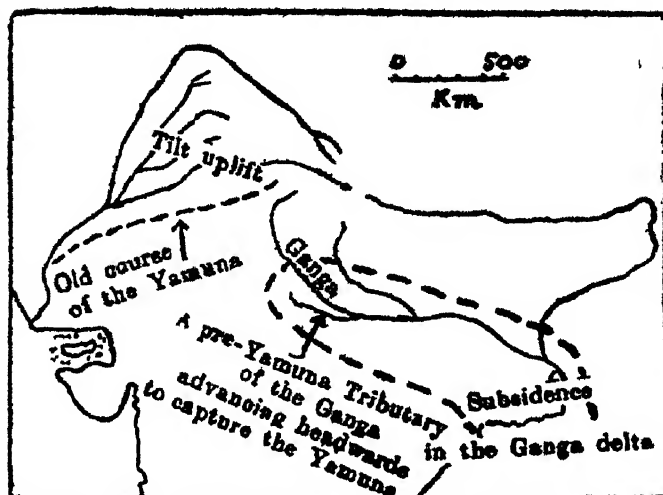
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River and Culture: A Study with Reference to the Tista, A River of Northern Bengal

I

It has been accepted by Historians, Anthropologists and Social Scientists that a river determines to a large extent the life and living of the people. It determines the pattern of culture. It moulds the style of life. Civilisation made its start in India with the Indus Valley Civilisation. Rigvedic India is said to be the land of the SAPTA-SINDHAVAHA (seven rivers). Vedic civilisation flourished on the banks of the Indus, the Jhelum, the Chenab, the Iravati, the Beas, the Ganga, the Yamuna, the Sarasvati and the Sona.

The Indo-Mongoloids developed their civilisation and culture in the Brahmaputra valley. Dravidian culture bloomed on the banks of the Godavari, the Krishna, the Kaveri and the Narmada. *Desha Matrika* is the object of common worship in India. Ours is the land of seven sacred rivers on whose sacred waters, the devotee must take his purificatory bath before worship.

"GANGE GHA YAMUNE CHAIVA
GODAVARI SARASVATI NARMADE
SINDHU KAVERI, JALESMIN SANNI-
DHIM KURU".

"O ye Ganga, Yamuna, Godavari, Narmada, Sindhu and Kaveri: enter ye into this handful of water I am offering for worship and impart to it your collective purity".

II

The present North Bengal comprises the five districts of West Bengal, viz., Coochbehar, Jalpaiguri, Darjeeling, West Dinajpur and Malda. It is under the administrative jurisdiction of the Jalpaiguri division of West Bengal with its headquarters at Jalpaiguri. It is bounded in the north by Bhutan, Nepal and Tibet, in the south by the Ganga, in the east by Bangladesh and on the west by Nepal and Bihar. The area includes the Himalayan Terai and the Duars. It is the land of the Indo-Mongoloids. The Rabhas, the Garos, the Meches, the Totos, the Lepchas, the Bhutias, the Limbus, the Nepalese and others live in this region. They are the Kiratas. The Rajbansis are the dominant community of North Bengal.

DR. PABITRA KUMAR GUPTA

The history of ancient Bengal is the history of North Bengal. It was part of ancient Kamrup, Kamtapur, Paundra and Gauda. It is known as Gauda Bhumi or the Barendra Bhumi, the home of the Barendas. A number of rivers flow down North Bengal. The Mahananda, the Tista, the Torsa, the Sankos, the Raidak, the Jaldhaka, the Punarbhaba, etc. are the important rivers.

III

The Tista is the largest and the most important river of North Bengal. It originates from the hills of Sikkim. It flows down the districts of Darjeeling, Jalpaiguri and Coochbehar, and ultimately meets the Brahmaputra in Bangladesh.

Originally it was called Trisrota—combination of three rivers—(i) the Punarbhaba, the Atrai and the Korottoa or (ii) the Mahananda, the Dharla and the Punarbhaba. The Tista is both destructive and creative. Its flood causes troubles, sorrows and miseries to thousands of people. The last devastation took place on October 4, 1968. In the life and lore of the people of North Bengal, the Tista plays a vital role.

IV

The people of North Bengal, in general, and the Rajbansis, in particular, worship the Tista as mother—Tista Mai or Tista Budi.

"To everybody, the Tista is old. But she is not old. She is young"—runs the local proverb. It reflects the youthful life of the Tista.

Tista Budi is a river deity. She is old. She wears a white sari. Her hair is white. She has a stick in her hand. She bends her body and smiles. This is the image of Tista Budi. But when she begins to flood, she becomes youthful. *Mechin Pala*, a famous folk-song evolved out of the worship of Tista Budi.

The worship of Tista Budi may be performed on any day in the month of *Vaisakha* (April-May). Rice is collected from the houses of the villagers by the *Gidalis*, i.e., women musicians.

They sing songs of Mechini Khela. The Tista Budi Puja is performed with the money earned by selling the collected rice. In the villages by the side of the Tista, there are *thans* or places for worship of Tista Budi. *Atap* (sun-dried) rice, banana, milk and curd, sugar, etc. are the materials required for the worship. There is no formal image of the deity. The image of an old lady is imagined. She is animated into a deity.

The worship is performed by a Deodhan/Demdha/Dendha. She is a lady. The Deosi sprinkles sanctified water on her head, and it is believed that she acquires the vigour and strength of the Tista Budi. The Deodhan whips herself and jumps and leaps. Then she takes her seat and listens to the desires of the villagers assembled. Questions on food production, economic condition of the people, the changing course of the Tista and flood, etc. are put to the Deodhan. And she answers. To relieve the people from the pangs of diseases and troubles, she gives them some earth of the place as *prasad* or blessings of the deity. The devotees take the *prasad* and confess their faults, if any. The Tista Budi, is a female deity. Her worship is also female-dominated. Perhaps, she is the product of matriarchal culture.

The worship of Tista Budi reflects fertility-cult. Agriculture in the locality depends upon the irrigation facilities offered by the Tista. Agriculture production may be damaged by the flood of the Tista. Agricultural lands may be liquidated by the change of the course of the Tista.

Hence, the Tista-Budi is worshipped and prayed for the welfare of the people. It may be said to be a magical performance for fertility. At the time of the worship of the Tista-Budi, the Deodhan utters the following incantations:

"I do hold the seat.
All gods will sit on it.
And Tista Budi comes down from heaven.
She steps upon the stage.
And gives life to the village"

During his field survey, the present writer was told a curious story by an old Rajbasi. In the Duars, there was a Mech settlement. Lord Siva left Kailas and came here to live with the Mech women. Hearing this, Parvathi and Ganga, two wives of Siva, disguised as Mech women, lived in the same village with Siva. Here, Kartik and Ganesh were born. Tista Budi is believed to be the emblem of Parvathi

and Ganga, and the Puja is called the Mechini Puja. It is called 'Khela' as it is accompanied with dance and music.

V

There is a very interesting folk-tale among the Lepchas on the love-affairs of the Tista and the Rangit. The Tista is imagined as a female and the Rangit as a male.

It is said that once there was a vast distance between the two rivers. This difference was intolerable to them. They decided to marry each other. They selected the present spot for meeting. But the route was then unknown to them. So they appointed guides. A black snake was the guide of the Tista. The speed of the snake was just like that of electricity. The snake had a thorough knowledge about the valley. The Tista followed her guide. Her course became zig zag like that of a serpent. On the other hand, the Rangit got a bird as his guide. The bird was hungry. So, during the journey, he used to go into the narrow passes in search of food. The course of the Rangit thus became complex. It began to pass by different curves and tunnels. The Tista became very impatient as she did not find the Rangit at the spot. The Rangit decided to turn back. At last, she found the Tista and they united. Even today, the Lepcha boys and girls remember the tale of the union of the Tista with the Rangit at the time of their marriage. At the wedding ceremony, the friends and relatives pray that the life of the new couples be simple and beautiful as the course of the Tista and the Rangit. The Lepcha boys and girls sing a ballad. The first stanza is sung by the boy and the second by the girl.

Boy: Behold, my heart is open. I will tell you everything. Please listen to me patiently.

Girl: My ears are for you. I will hear you. How sweet your song. I will listen patiently.

Boy: Much is talked. Remember only one word. Let us love each other. Let us remember every day.

Girl: I am a simple lass. I do not know this world. You are intelligent and hard working. Teach me everything.

Boy: I say loudly. You are like the streams of the Tista. I am the waters of the Rangit. Let us unite like them.

VI

- Girl Yes, I am like the Tista, since the dawn of creation and at this moment, I am in mother's lap like a pearl
- Boy I am a young Lepcha boy I am from the Glacier I am happy today you could recognise me
- Girl I am a Lepcha girl I am waiting for you We have united together God will bless us
- Boy We are from the same race We are happy in wedding God will bless us
- Girl You are youthful like Rangit I am like the flow of Tista That we will be united God desired it
- Boy Now that we are wedded, we will flow like one stream in search of pearls and golds We will move to the sea
- Girl If we get pearls and golds, our future generations will spread in the world

In Darjeeling district, near the Rangli Rangliot Police Station, there is a place known as Tiiveni Mai. The place is solitary. There is no habitation. Two streams meet with the Tista here. It is a *sangam*. Every year on the auspicious *Makar Sanranti* Day (January 14-15), five or six thousand devotees assemble here from Nepal and Sikkim and the plains. They bathe in the old *Sangam* and believe that they will get salvation. "SAMGAME CA NADINAM DHIYA VIPRA AJAYATA"

Moreover, as the Tista has originated from the Himalayas, she is holy

"SARVEM PUNYAM HIMAVA TO GANGA PUNYA GA SARVATA"

Thus, the Tista plays a vital role in the life and culture of the people of North Bengal



The Sacred Brahmaputra

T SESHASAYEE

All rivers are sacred, all flow towards the sea "All are like mothers to the world, all purge away sins" says the *Markendaya Purana*

Ancient Hindu literature classifies *Mahanadis*—the great Rivers under masculine and feminine The seven great rivers (*Mahanadas*) that come under Masculine address are the Sona, the Sindhu, the Hiranya, the Koka, the Lauhitya, the Gharghara and the Satadru

Sri Lauhitya is a synonym to Brahmaputra which passes through the heart of Assam State like a big artery

Brahmaputra, the son of Brahma is not only one of the largest rivers of India but also of the world, which traverses a distance of nearly 2,900 kms through Tibet, India and East Pakistan and drains an area of about 5,80,000 sq kms In Tibet, it is known as the Tsang Po meaning "The Purifier".

Brahmaputra rises in the greater glacier in the northern chain of the Himalayas in the Kailas range at an elevation of about 5,150 metres, just south of the lake called Konggu Tsho

It belongs to the family of east-flowing rivers of the Himalayas and shares their riverine qualities also The Hwang Ho, the Yangtze-kiang and Mekong belong to the east flowing rivers

Meeting of Tributaries

Many tributaries merge into the new-born river near the Mariam La Pass which segregates

its basin from the Manasarovar Lake, the source of two great Indian rivers, namely, the Indus and the Sutlej

The river Tsang Po flows through southern Tibet for about 1,800 kms eastwards, parallel to the main range of the Himalayas The first tributary meets from the north, the Raga Tsang Po near Lhatse Dzong At Shigatse, the second town of Tibet, the river Ngangchu joins from south Then from north it is joined by Kyichu an important tributary on which the capital and sacred town of Tibet, Lhasa is located The wide navigable channel for about 640 kms and 3,650 metres above the mean sea-level, opens from the Lhatse Dzong

The river Grianda meets from north at Tselha Dzong The river abruptly turns to the north-east and north at Pe and then passes through in a succession of rapids between the high mountains of Gyala Peri and Namcha Barwa Then it turns to the south and south-west to emerge from the foot-hills under the name of the Siang and then as the Dihang

Entering India

The river enters India across the Sahrdaya frontier tract, west of Sahrdaya town and into the Assam valley The Dibong and the Lohit, the two branches join here From here it is known as the Brahmaputra It is called in local tongue as LUHIT or LUIT

It flows through the Assam valley east to west for about 720 kms There are many islands formed because of its channel's oscillation from side to side

BRAHMAPUTRA

ORIGIN	Kailas range of mountains in Tibet called 'Tamehok Khumbala Chorten' ranges in Tibetan In Tibet the river is called 'Tsangpo'
ROUTE	West to East in Tibet (1,600 kms) and entering through Arunachal as 'Dibang' flows across Assam for 720 kms In Bangladesh, it is called Padma and joins the Ganga and flows into the Bay of Bengal
TRIBUTARIES	IN ARUNACHAL Siang, Dibang, Lohit, Subansiri (Swarna Shree), Tirap and Kameng IN ASSAM Dihang, Dissang, Dikho, Kak Durga, Dhansiri, Kolong, Kopili, etc

During its course, many rivers both from the north and south join as tributaries, of which some are trans-Himalayan. The Subansiri, the Kameng, the Dhansiri, the Manas, the Champamati, the Saralbhangra and the Sakoshi are from the north, and the Noa Dihing, the Buru Dihing, the Disang, the Dikhu and the Kopili or Kapili from the south.

It traverses round the spurs of the Garo hills near Goalpara and enters East Pakistan. It flows 270 kms across the alluvial plains of East Pakistan and joins the Ganga at Goalunda. The united stream is called the Padma, which is joined by another large river of Assam, the Meghna on the left bank, 105 kms below Goalunda. The southward confluence is now known as the Meghna, a very broad estuary and merges into the Bay of Bengal.

The Brahmaputra has been one of the main inland waterways in India for a long time. The main route of transport between northern and eastern points is via the Ganga and Brahmaputra. During the British rule, stream navigation services were operated between Bihar, Bengal and Assam. Now it has been curtailed. However, it is a very important commercial route between Calcutta, East Pakistan and Assam.

References in Puranas

Kalika Purana describes Brahmaputra as flowing from Brahmakunda into the Lohitasarovara in Kailasa valley.

The legend of Brahmaputra in *Kalika Purana* elucidates that Parasurama bathed in this Brahmakunda (Putra) to expunge the sin of killing his own mother, dug the eastern end with his axe and brought its flow to the land of Kamarupa, i.e., Assam. Thus it flooded the whole region of Kamarupaputra.

The *Mahabharata* also states that the royal *tirtha* of Brahmaputra was established by the grace of Parasurama. *Yogini tantra* says that by a mere bath in this *Lauhtiya*, all sins disappear. It is the *Tirtha Raja* where all the other *Tirthas* have chosen to abide. If one takes a bath, offers a gift or a sacrifice, does japa or puja, whatever is performed here yields inexhaustible good.

The history and culture of Assam are very deeply influenced by the Brahmaputra. The *Kalika Purana* and *Yogini Tantra* give an elaborate description of the various religious places of ancient and medieval Assam. Rivers Ganga,

Yamuna and Sarasvathi meet at Prayag but the Brahmaputra meets this united stream first at Goalunda and then at Chandpur. The sanctity of the Brahmaputra is exalted owing to its meeting the united stream of the three rivers.

Kalika Purana and *Yogini Tantra* mention many important *tirthas* on the banks of the Brahmaputra. One of the Sakti Pithas, the Kamakhya Devi temple, is situated on the Neelachala hill, which is about two miles away from Gauhati.

Yogini Tantra mentions Apararbhava as one of the ancient *tirthas*, where Lord Janardana Hayagriva stayed. This was originally situated on the bank of Brahmaputra.

Bhasmakuta or Bhasmachala is situated amidst Brahmaputra. It is said Lord Siva sprinkled ashes here before imparting knowledge to Parvati. It is called so since Lord Siva, with his third eye, burnt Kamadeva into ashes. On this Urvashi-kunda is situated. The damsel Urvashi brought nectar or *amrita* for goddess Kamakhya. *Yogini Tantra* states, whoever takes a bath here on the twelfth or bright half of *Magha* acquires the merit of performing *Asvamedha yaga*. The temple of Manikarneswara is situated on the north-east of Bhasmakuta.

The Pandunath Hill near Gauhati, is the place where Madhu and Kaitabhas were killed, says the *Kalika Purana*. Krishna, it is said, rested on the *Asvakranta* which is on the northern bank of the Brahmaputra. This *tirtha* of Lord Janardana is one of the greatest *Tirthas*. The Lake *Asvitirtha* is to the south of *Asvakranta* and is associated with the *Kalki Avatara* of Lord Vishnu.

Apart from these, the major hydro-electric power stations on southern tributaries, were developed due to the heavy rainfall along the course.

Minerals

The Brahmaputra and its tributaries have mineral resources also. The Kopili, one of the branches, has these springs in the Mikir Hills, Nambor in Sibsagar district and at North Cachar through which it passes. These springs are with a moderate discharge. The temperature of water ranges from 53° to 58° C. The water is pure and tasteless and deposits a slight calcareous incrustation.

The Brahmaputra valley, Jhils of Sylhet

and Gachar contain a mass of decayed vegetation of the mineral peat

The oil belt of Assam spreads from the Dihing basin in the extreme north-east of the province along the outer flanks of the Brahmaputra and Surma valleys to the Islands in the Bay of Bengal. Petro lifeous beds are known as 'Coal measures' in local tongue

Platnum is also found along with gold in one of the branches of Brahmaputra, viz, Noa Dihing

In upper Assam in Lakshmipur, Pyritous shales are found along with the coal streams, but it contains a small quantity of Sulphur

The great and sacred river Brahmaputra flows with its 120 tributaries, through almost all districts of Assam State and carves an extensive valley of its own. Thus it occupies an important place in the history of the rivers

Our great seers (*Rishis*) attributed sanctity to all mountains and rivers, including Brahma-

putra, not because of its length, width and aesthetics but for its mineral springs which act as a means to cure the skin diseases for longevity of life. Thus our ancient seers elevated the rivers to sanctity to free them from the clutches of monopoly and bound them in a unifying string of our glorious culture

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My My Brahmaputra

Do you know

that Brahmaputra, the longest river in India is also the broadest one? It is 2,900 kms long and stretches about 12 kms in width from one bank to another?

that the geologists hold it to be older in age than the Himalayas itself?

that Brahmaputra is the only river in the world which shows diametrically opposite drainage pattern, i.e., in Tibet it flows from West to East and in Assam from East to West?

that Brahmaputra, in spite of its tremendous water-resources, is the only major river in India which has not yet been tapped for irrigation purposes?

Thus, in the absence of any dam or canal, the entire region has only a single crop cultivation per year

that the Brahmaputra has a tremendous potential for Hydro-electric power generation?

The Experts have calculated that while the aggregate power generated all over India put together is about 35,000 MW, a single H E Project in Brahmaputra alone would generate that much power!

that Brahmaputra also fondly referred to as 'Luit' by the North Eastern peoples, is a 'nad' i.e. the only 'male' river in Indian mythology?

that following the Great Earthquake of 1950, the second biggest earthquake ever recorded in the history of mankind, Sadiya, an important trade centre in the North eastern extreme of India adjoining Arunachal was totally washed out in floods?

that since 1950, floods have been playing havoc every year with Assam's economy and ecology?

In 1950 alone, the loss was about Rs 10 crores and bringing untold miseries to lakhs of human beings

In 1954, the majestic Post Office Building in Dibrugarh slumped into water and disappeared right under the footsteps of Pandit Nehru, who was visiting the town

The 1954 floods washed away more than half of Dibrugarh town, which was one of the most beautifully planned cities in the entire north-eastern India.

That till 1950, the most important mode of travel across Assam was through Brahmaputra? One could come from Calcutta up to Dibrugarh by steamer covering a distance of 1,240 kms. up the river!

that Hiuen Tsang the famous Chinese scholar and pilgrim monk at Emperor Harsha's Court had recorded that the boatmen of Kamarupa's king took him within 3 days to Pataliputra through the river?

that the great development of tea-industry in Assam during the last 130 years owes much to the cheap and easy mode of communication available through the river?

that hundreds of miles of dyke, big enough for a bus to ride on top, protects the banks of Brahmaputra? And as in Holland, the river flows many feet higher than the ground level during monsoon.

that, as the legend goes, Princess Usha, daughter of Banasura and grand-daughter-in-law of Lord Krishna hailed from Texpur an ancient town on the Brahmaputra bank, and Rukmini, the Lord's divine consort came from Bhismaknagar on the banks of Lohit river?

that Majuli island, the largest river island in the world (area 1,256 sq kms) is situated in upper Brahmaputra?

Majuli is a haloed place of pilgrimage and centre of Assamese culture due to its association with Srimanya Sankar Deva, the great Saint of Assam

that the only bridge across the Brahmaputra is built at Saraighat at Gauhati?

This rail-cum-road bridge of great strategic importance to India was built just before the Chinese Aggression in 1962. It cost Rs. 10 crores. Work for two more new bridges has been started.

"Nara Narayan Sabu" at Panchratna, Western Assam and "Kalia Bhomora" bridge at Tezpur

that Saraighat has a permanent place in the history of Mughal Empire?

It was here that the Great Assamese General, Lachit Barphukan, inflicted a crushing naval defeat to the Mughal armies of Aurangzeb, led by Raja Ram Singh

— Compiled by S. MUNDAYOOR



Some Important Irrigation Projects of India—A Bird's Eye View

India is a tropical country. Monsoon is seasonal. About 75% of her people live by agriculture. Different crops are grown in different seasons. Unless a certain quantity of water supply is ensured, agriculture cannot thrive. Often, the rainfall is uncertain. Therefore dams have been constructed to store water whenever it is available in plenty so that the agricultural lands could be regularly irrigated through the canals. Most of the dams have a multi-purpose. They are not only reservoirs of water but also generators of hydro-electricity. Some of the irrigation projects are listed below, with reference to their location.

1. Andhra Pradesh

- a) Nagarjuna Sagar dam across the Krishna river in Nalgonda district, about 4 kms from Hyderabad
- b) Pochampad is about 5 kms upstream of Sone bridge across the river Godavari in Nirmal taluk of Adilabad district
- c) Thungabadra dam across the Thungabadra river

2. Assam

The Jamuna Irrigation Scheme runs across the river Jamuna near Diphu. The length of the dam is 311.60 metres and the height is 3.05 metres.

3. Bihar

- a) The Badua dam is across the river Badua at Hanuman Pahar
- b) The Chandan dam is on the river Chandan near Lakshmipur
- c) The Gandak barrage is across the river Gandak at Balmiknagar about 750m below Tribeni canal. It was constructed at a cost of 1,081.8 million rupees. Half the length of the barrage is in Nepal. There are also the Kosi and Sone barrages constructed over the rivers with the same names.

4. Gujarat

Rivers Banas, Hathmati and Tapi all have dams across them, named after these rivers. Ukai and Shetrunji are the

longest dams. The Narmada dam is across the river Narmada near Navagam village.

5. Haryana

It has the Guagaon Canal and the Western Jamuna Canal.

6. Jammu and Kashmir

Jammu and Kashmir has the Tawi Lift Irrigation on the left bank of river Tawi.

7. Karnataka

- a) Bhadra dam across the river Bhadra near Lakkavali village
- b) Hemavathy in Mysore
- c) Kabini dam near Bidarahalli
- d) Thungabadra dam across the river Thungabadra at Mallapur village in Bellary district

8. Kerala

Kallada, Kuttiyadi, Malampuzha and Periyar dams.

- a) Kallada is in Quilon district
- b) Kuttiyadi is in Kozhikode
- c) Malampuzha dam is across the river Malampuzha in the district of Palghat
- d) Periyar dam is across the river Alwaye in Ernakulam district

9. Madhya Pradesh

- a) Barna dam — Barna river
- b) Gandhi Sagar dam Chambal Project — Chambal rivers
- c) Tawa dam—Tawa river, a tributary of Narmada river

10. Maharashtra

- a) Bhag dam across Bhag river
- b) Bhima dam across Parana river near Phagna of Pune district
- c) Ghod dam across the river Ghod in Pune district on one side and at village

Vadagaon Madhe, Shurgonda Taluka in Ahmednagar district on the other side

- d) Girna dam across Girna river in Nasik Itiadh, Jayakwadi (Stage I), Khadakwasala Stage I, Krishna Kukadi Stage I, Mula dam, two dams by name Purna, Upper Godavari, Vir and Warna

11 Orissa

- a) Hirakud across the river Mahanadi The dam was completed in 1957
b) Salandi across the river Salandi

12 Punjab

- a) Beas (Unit I and II)
b) Bhakra Nangal dam across the river Sutlej

13 Rajasthan

- a) Rana Pratap Sagar dam across the river Chambal
b) The Kotah barrage is also across the same river
c) The Rajasthan Canal takes off from Harike Barrage in Punjab across the river Sutlej

14 Tamil Nadu

- a) Chittar Pattnamkal dam across the river Chittar
b) Lower Bhavani dam across the river Bhavani
c) Manimuthar dam across the river Manimuthar in Tirunelveli District
d) Parambikulam dam with five weirs on the Annamalai hills and two weirs on the plains of Aliyar and Palar

15 Uttar Pradesh

- a) Matatila dam across the river Betwa
b) Ramganga dam across the river Ramganga
c) Sarda Sagar across the river Chuka, a tributary of the Ghagra river

16. West Bengal

- a) Kangsabati dam across the rivers Kangsabati and Kumari
b) Mayurakshi across the river Mor

Compiled from *Times of India, Directory and Year Book 1978*

— K P S



The Mineral Wealth of the Waters

A. K. MALHOTRA

Mountains are the source of all rivers. Rivers traverse the mountain tracts, deep gorges and rocky beds. They flow over plain soil and finally drain their enriched sources of water into the ocean. It is the very same ocean beds that transform themselves into lofty mountains due to geological cataclysms. Thus, completes a great cycle of the heights and depths of this world globe.

Mankind so far enriched themselves with the mineral and oil wealth of mountains and the soil beneath them. Now, modern science has shown the way for possessing the same wealth from the sea-beds and off-shore structures. Thanks to the age-long efforts of the rivers, the oceans got those mineral wealth in its various forms. But, hitherto, it was all a hidden treasure and now the key for the treasure-house has been found. The looting has started by the adventurous humanity. It will go on for a sufficiently long time.

Scientists have found out that every cubic kilometre of sea-water contains about 40 million tons of dissolved solids which could have a value of more than Rs. 75 billion when extracted. These are the materials of the sediment and chemically formed substances such as ferro-manganese nodules, mining of submarine deposits of tin, diamond, gold and iron now well-known the world over. Near-shore submarine deposits of sand and gravel are now available in plenty for construction activities. It is estimated that all these minerals are present in the seas in large enough quantities to satisfy our demands for a number of decades if not centuries as tabulated below:

Per Capita availability of Minerals for 6 million People

Minerals	From sea-water	From ferro-manganese nodules
Manganese	2 tons	60 tons
Aluminium	200 tons	7 tons
Copper	400 lbs	1 ton
Iron	—	35 tons
Cobalt	—	1 ton
Nickel	—	2 tons
Silver	140 lbs	—
Gold	3 lbs	—
Potassium	9×10^4 tons	—
Calcium	9×10^4 tons	—
Salt	6×10^8 tons	—

In India, among other physical sources, heavy mineral-rich beach sands containing Monazite and Ilmenite have been found. The Indian Ocean has proved to be a repository of ferro-manganese nodules. Offshore occurrence of calcareous deposits suitable for chemical and cement industries have been reported from the Andaman and Nicobar sea-beds and of other islands around India. Desalination of sea-water using nuclear power is progressing rapidly. Temperature differences between surface and deeper water, as well as upswelling and sinking water surfaces also provide energy to be tapped. Materials needed for atomic fusion and fission are also available from the seas. Exploitation of oil and natural gas is now in full swing in offshore sea-beds and river basins. Three types of drilling rigs are put into service for these operations. They are known as A. Discoverer III, B. Semi-submersible III Mark-2 and C. Offshore Mercury, a self-propelled driller. It is established that about 20 percent of the world's reserve of oil lie offshore rich with hydrocarbons.

Thus, the mountains and rivers are helping humanity to obtain their mineral requirements easily from the oceans, which our ancients called, Ratnakara, source of precious things. At present, we are getting about 34 varieties of minerals from the womb of Mother Earth. Innumerable numbers of mine workers have lost their life in these mineral digging operations under very tragic circumstances. It is hoped that the future has got a great hope of cheer for such poor workers. The oceans have come forward to rescue them as well as Mother Earth. Probably, the presiding deities of the oceans are not aware of the dangers of pollution, to which the Earth and its Rivers have been subjected to by mankind. If the seas are also polluted beyond limits just as Earth, Rivers and Atmosphere, then woe unto humanity! The seas will retaliate surely by depriving mankind of the vast supplies of sea-foods like fish, prawns, etc.

Let us live, but let us allow other creatures to live with us.

Summary. 'Sakthipatra'

Summary of original in Science Today, March '72.





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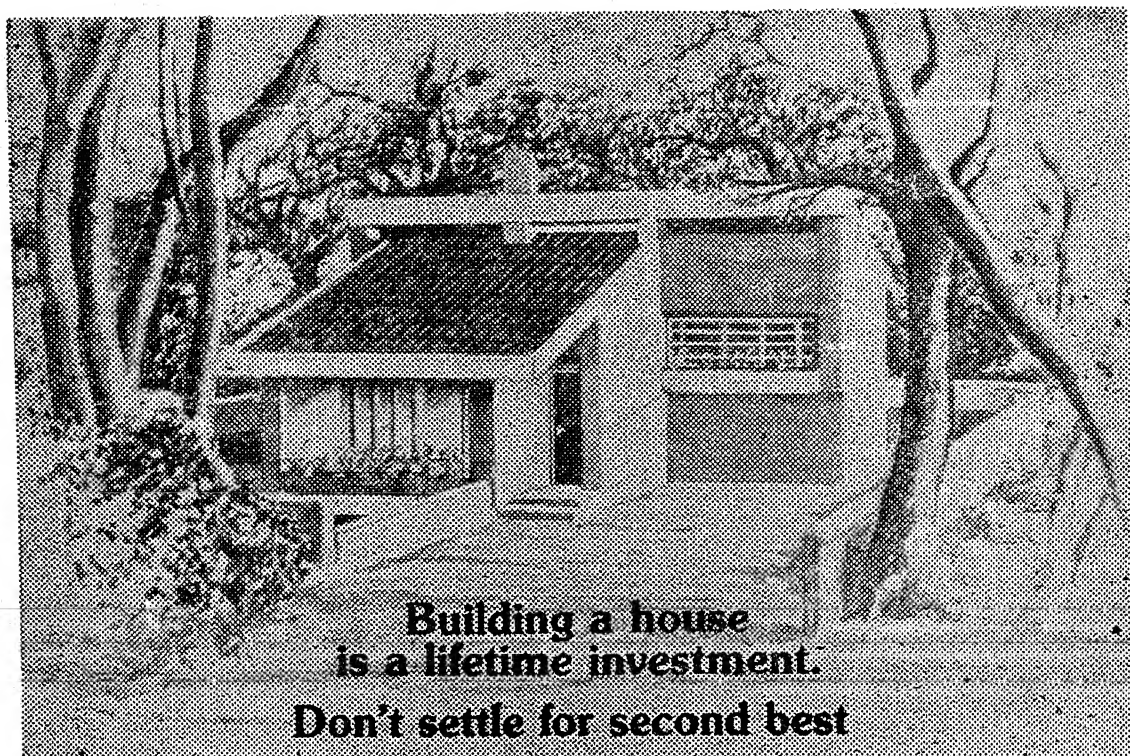


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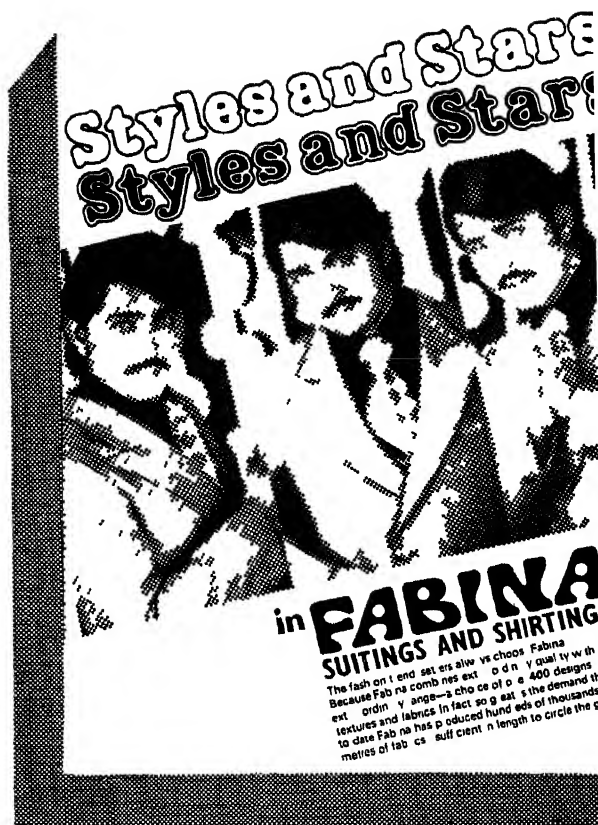


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